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ATLAS OF HUMAN ANATOMY

WITH LATIN TERMINOLOGY

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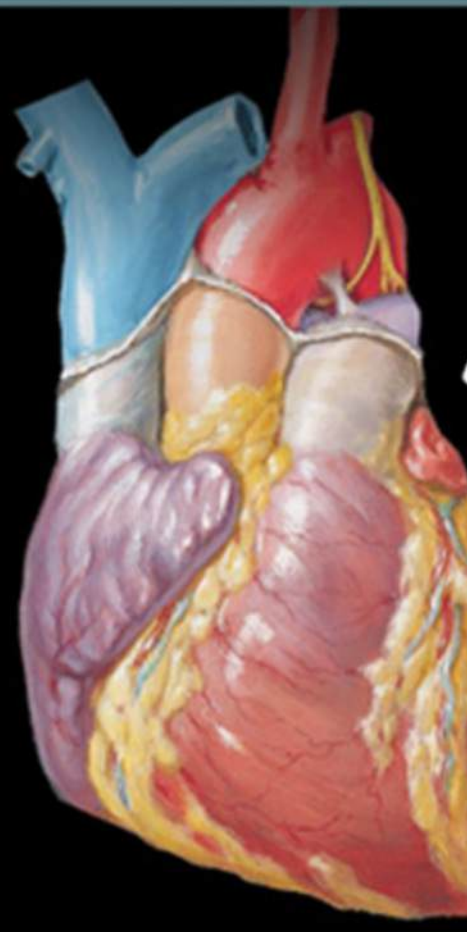

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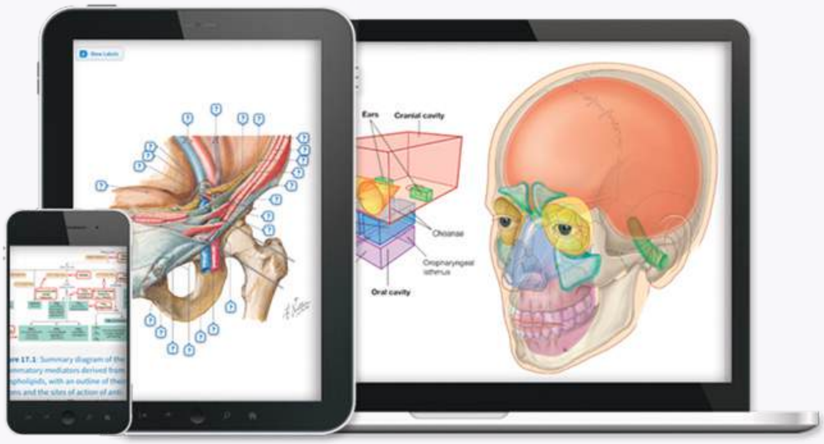

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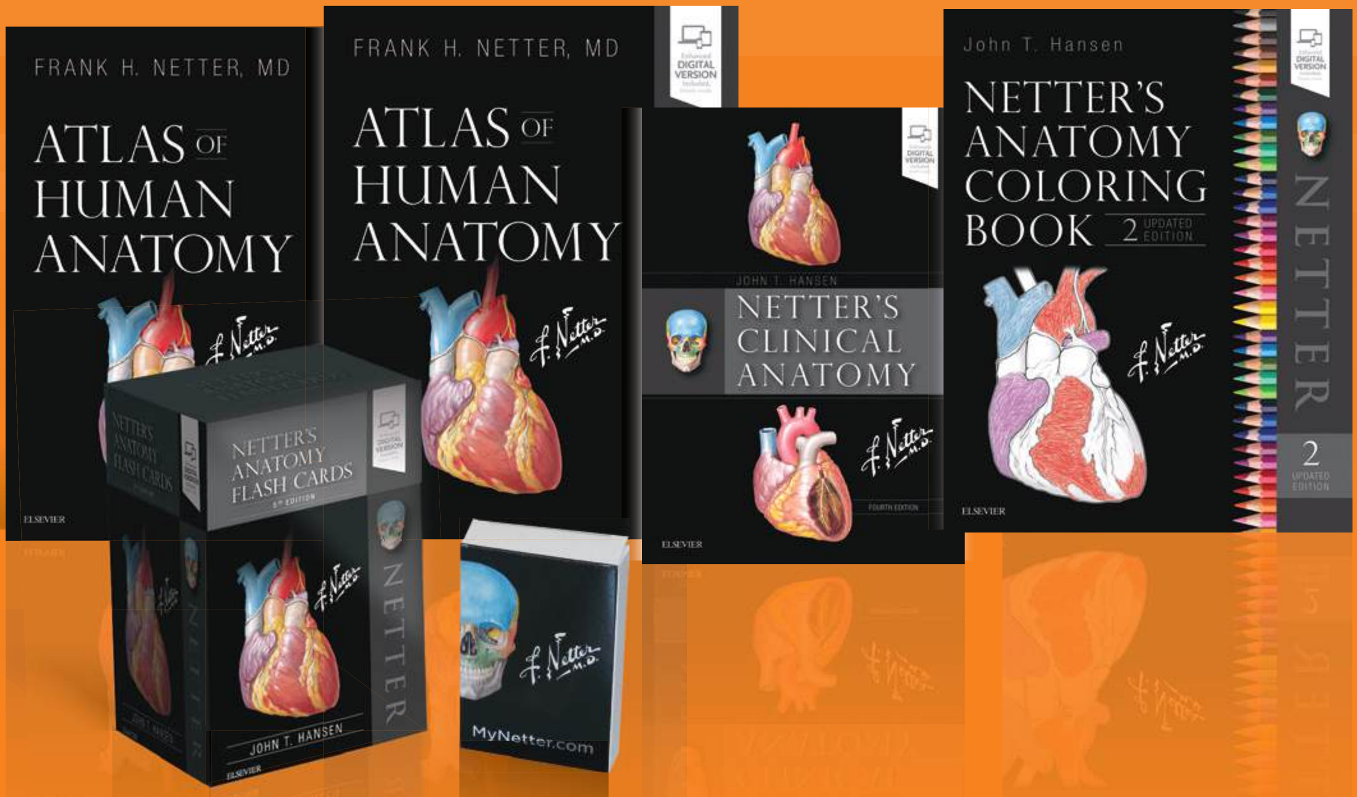
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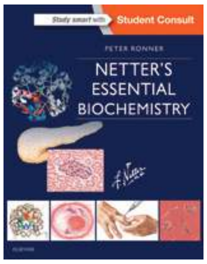

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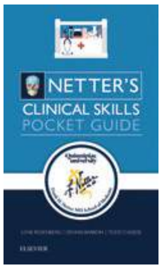

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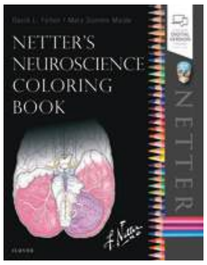

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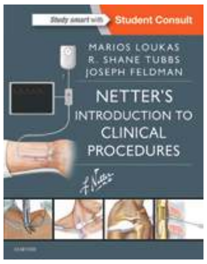

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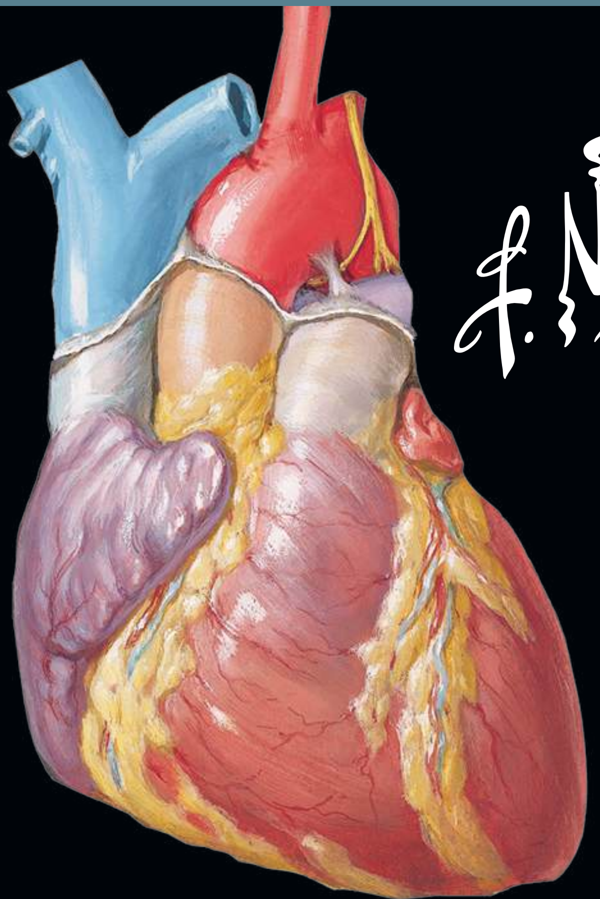

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NEW TO THIS EDITION

With your copy of the Frank H. Netter, MD, *Atlas of Human Anatomy*, you own a collection of some of the most well-known depictions of human anatomy in medicine and healthcare. In addition to the famous work of Dr. Netter, with your copy of this 7th edition, you also have access to nearly 100 painted pieces by Carlos A. G. Machado, MD, one of the foremost medical illustrators working today. Dr. Machado's contributions to the *Atlas* highlight important views of anatomy that have become more clinically relevant in recent years— anatomic views that have resulted from improved dissection techniques and modern imaging. In addition, you have access to more than 50 carefully selected radiologic images that help bridge the idealized illustrated anatomy with living anatomy viewed in the clinic.

While numerous updates have been made to the illustrated plates and tables to make them easier to learn from, the most significant changes to this edition include:

Introductory Section

To fulfill the requests from many students and fans of Netter's *Atlas*, we have added a new opening section containing several overview plates. These plates provide the very first head-to-toe views in the *Atlas of Human Anatomy!*

Clinical Tables

The *Atlas of Human Anatomy* is the only anatomy atlas illustrated by physicians. Dr. Netter was a surgeon and Dr. Machado is a cardiologist. The views of anatomy in this atlas have always reflected a clinical perspective. In line with this clinical focus, and in congruence with integrated curricula in health and medicine, tables at the end of each regional section highlight the most commonly injured structures, as well as other structures with high clinical significance and commonly covered in anatomy courses. The tables provide students with quick summaries, organized by body system, and note where to best view these key structures in the illustrated plates.

New Art Plates by Dr. Machado

For this edition alone, over 25 new illustrations have been painted by Dr. Machado. Suggestions for new plates of additional anatomic views and concepts are submitted by students, faculty, anatomists, physicians, and others. Sometimes suggestions are solicited at major anatomy conferences with a "What Should Carlos Paint Next?" idea box. Decisions around which new plates are prioritized and given space in a new edition come from discussions among consulting editors. The new plates for this edition are largely those that portray structures with clinical significance (Fascial Columns of the Neck, Deep Veins of the Leg, Hip Bursae, and Vasculature of the Prostate) or those that are difficult to visualize (Infratemporal Fossa)—and, of course, the new additions created for the introductory section.

New Radiologic Images

Over 50 radiologic images—some completely new views and others replacing existing views using newer imaging tools—are included in this edition. Images have been selected based on their utility to students studying gross anatomy.

Your *Atlas of Human Anatomy* content has been updated, created, and overseen by a team of dedicated and passionate consulting editors, with the help of a stellar international advisory board, and guided by the feedback of many students, educators, anatomists, and clinicians that love Netter's *Atlas*. Please feel free to comment on the Netter Images Facebook page or Twitter feeds or email us directly with your thoughts, suggestions, or questions at NetterAppFeedback@Elsevier.com.

Latin Nomenclature

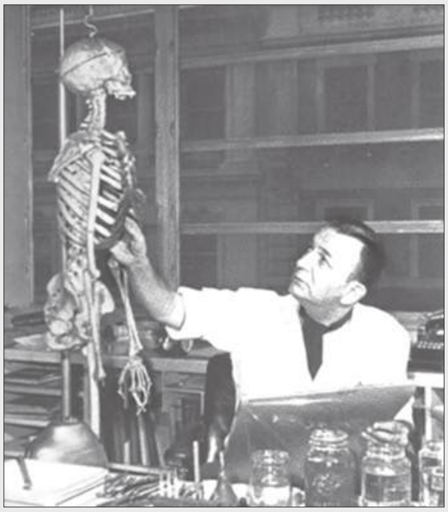
This is the first English-Latin Netter: *Atlas of Human Anatomy*. It contains Latin anatomical terms from the draft of the second edition of *Terminologia Anatomica* (TA). The draft revision of TA includes changes accepted (in Göttingen, Germany, on September 24, 2016) by the Federative International Programme on Anatomical Terminologies (FIPAT), additional spelling and grammar corrections, and changes recommended by FIPAT's Informatics subcommittee (*Clin Anat* 30:300-2, 2017) to eliminate appositions and to adopt word order rules that simplify the terms. Every effort has been made to ensure consistency in usage of English and Latin in the plates and tables, including use of complete Latin terms, English conjunctions, and punctuation between noun phrases.

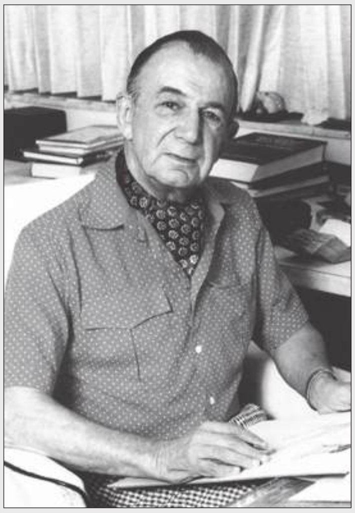
Latin Abbreviations

SINGULAR		PLURAL	
A., a.	Arteria, arteriae	Aa., aa.	Arteriae, arteriarum
Art., art.	Articulatio, articulationis	Artt., artt.	Articulationes, articulationum
dex.	dexter, -tra, -trum; dextri, -ae, -i	dex.	dextri, -ae, -a; dextrorum, -arum, -orum
Lig., lig.	Ligamentum, ligamenti	Ligg., ligg.	Ligamenta, ligamentorum
M., m.	Musculus, musculi	Mm., mm.	Musculi, musculorum
N., n.	Nervus, nervi	Nn., nn.	Nervi, nervorum
Proc., proc.	Processus, processus	Procc., procc.	Processus, processuum
R., r.	Ramus, rami	Rr., rr.	Rami, ramorum
sin.	sinister, -tra, -trum; sinistri, -ae, -i	sin.	sinistri, -ae, -a; sinistrorum, -arum, -orum
V., v.	Vena, venae	Vv., vv.	Venae, venarum

In each column, the nominative and genitive forms are provided.

Frank H. Netter, M.D.





PREFACE TO THE FIRST EDITION

I have often said that my career as a medical artist for almost 50 years has been a sort of "command performance" in the sense that it has grown in response to the desires and requests of the medical profession. Over these many years, I have produced almost 4,000 illustrations, mostly for *The CIBA* (now *Netter*) *Collection of Medical Illustrations* but also for *Clinical Symposia.* These pictures have been concerned with the varied subdivisions of medical knowledge such as gross anatomy, histology, embryology, physiology, pathology, diagnostic modalities, surgical and therapeutic techniques, and clinical manifestations of a multitude of diseases. As the years went by, however, there were more and more requests from physicians and students for me to produce an atlas purely of gross anatomy. Thus, this atlas has come about, not through any inspiration on my part but rather, like most of my previous works, as a fulfillment of the desires of the medical profession.

It involved going back over all the illustrations I had made over so many years, selecting those pertinent to gross anatomy, classifying them and organizing them by system and region, adapting them to page size and space, and arranging them in logical sequence. Anatomy of course does not change, but our understanding of anatomy and its clinical significance does change, as do anatomical terminology and nomenclature. This therefore required much updating of many of the older pictures and even revision of a number of them in order to make them more pertinent to today's ever-expanding scope of medical and surgical practice. In addition, I found that there were gaps in the portrayal of medical knowledge as pictorialized in the illustrations I had previously done, and this necessitated my making a number of new pictures that are included in this volume.

In creating an atlas such as this, it is important to achieve a happy medium between complexity and simplification. If the pictures are too complex, they may be difficult and confusing to read; if oversimplified, they may not be adequately definitive or may even be misleading. I have therefore striven for a middle course of realism without the clutter of confusing minutiae. I hope that the students and members of the medical and allied professions will find the illustrations readily understandable, yet instructive and useful.

At one point, the publisher and I thought it might be nice to include a foreword by a truly outstanding and renowned anatomist, but there are so many in that category that we could not make a choice. We did think of men like Vesalius, Leonardo da Vinci, William Hunter, and Henry Gray, who of course are unfortunately unavailable, but I do wonder what their comments might have been about this atlas.

Frank H. Netter, MD
(1906–1991)

FRANK H. NETTER, MD

Frank H. Netter was born in New York City in 1906. He studied art at the Art Students League and the National Academy of Design before entering medical school at New York University, where he received his Doctor of Medicine degree in 1931. During his student years, Dr. Netter's notebook sketches attracted the attention of the medical faculty and other physicians, allowing him to augment his income by illustrating articles and textbooks. He continued illustrating as a sideline after establishing a surgical practice in 1933, but he ultimately opted to give up his practice in favor of a full-time commitment to art. After service in the United States Army during World War II, Dr. Netter began his long collaboration with the CIBA Pharmaceutical Company (now Novartis Pharmaceuticals). This 45-year partnership resulted in the production of the extraordinary collection of medical art so familiar to physicians and other medical professionals worldwide.

Icon Learning Systems acquired the Netter Collection in July 2000 and continued to update Dr. Netter's original paintings and to add newly commissioned paintings by artists trained in the style of Dr. Netter. In 2005, Elsevier Inc. purchased the Netter Collection and all publications from Icon Learning Systems. There are now over 50 publications featuring the art of Dr. Netter available through Elsevier Inc.

Dr. Netter's works are among the finest examples of the use of illustration in the teaching of medical concepts. The 13-book *Netter Collection of Medical Illustrations,* which includes the greater part of the more than 20,000 paintings created by Dr. Netter, became and remains one of the most famous medical works ever published. *The Netter Atlas of Human Anatomy,* first published in 1989, presents the anatomic paintings from the Netter Collection. Now translated into 16 languages, it is the anatomy atlas of choice among medical and health professions students the world over.

The Netter illustrations are appreciated not only for their aesthetic qualities, but, more importantly, for their intellectual content. As Dr. Netter wrote in 1949 "clarification of a subject is the aim and goal of illustration. No matter how beautifully painted, how delicately and subtly rendered a subject may be, it is of little value as a *medical illustration* if it does not serve to make clear some medical point." Dr. Netter's planning, conception, point of view, and approach are what inform his paintings and what make them so intellectually valuable.

Frank H. Netter, MD, physician and artist, died in 1991.

ACKNOWLEDGMENTS

Carlos A. G. Machado, MD

I struck luck when joining this golden team of consulting editors exceedingly knowledgeable in the fields of clinical anatomy and medical education. It has been a great honor to work with and be under their guidance, as well as under the highly competent coordination of Elyse O'Grady and Marybeth Thiel, Elsevier's Executive Content Strategist and Senior Content Development Specialist, respectively.

This unique book would not exist without the genius of its creator, Dr. Frank Netter, to whom I owe special thanks, also in the name of generations of students and health professionals who, like myself, have learned so much from his incommensurable body of work.

I dedicate my work and express my most sincere thanks to my beloved parents, Carlos and Neide, who provided me with the foundation of my education; to my patient wife, Adriana, and talented daughter, Beatriz, for their love and support; to the students, teachers, and health professionals who rely on my work to learn and teach; to all the body donors and living friends that have respectively been the subjects of my studies and models of most of the illustrations I have created for the *Atlas*; and to my teachers Eugênio Cavalcante, Mário Fortes, and Paulo Carneiro for taking my interest in human/clinical anatomy much further.

John T. Hansen, PhD

At Elsevier I would like to thank Marybeth Thiel, Senior Content Development Specialist, Elyse O'Grady, Executive Content Strategist, John Casey, Senior Project Manager, Patricia Tannian, Publishing Services Manager, Julia Dummitt, Design Manager, Karen Giacomucci, Illustration Buyer, and Madelene Hyde, Publishing Director, for their continuous support and meticulous attention to detail during the development of this seventh edition of the *Atlas of Human Anatomy*. They, along with the entire editorial, production, design, and marketing teams at Elsevier have been a delight to work with and to know. I also wish to thank my consulting editors for their insightful and constructive suggestions as we strive to make every new edition of the *Atlas* better. I am also indebted to Carlos Machado for his superb artistic skill in producing and updating a number of plates that appear in this latest edition of the *Atlas*. His renderings of human anatomy are the perfect complement to the Netter images. In addition to my fellow editors, I wish to express my thanks to my faculty colleagues at Rochester and to all my past and present students who have provided generous and constructive feedback and have enriched my life. Finally, I am indebted to my entire family for their continued support and especially to my wife, Paula. Their love and encouragement sustains me and is the source of all the happiness and joy I know.

Brion Benninger, MD, MSc

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Jennifer Brueckner-Collins, PhD

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411 Shoulder: Anteroposterior Radiograph
412 Shoulder with Details of Glenohumeral Joint
413 Muscles of Shoulder
414 Axilla: Posterior Wall
415 Muscles of Rotator (Compressor) Cuff
416 Pectoral, Clavipectoral, and Axillary Fasciae
417 Scapulothoracic and Shoulder Dissection
418 Axillary Artery and Anastomoses Around Scapula
419 Axilla: Anterior View
420 Brachial Plexus: Schema

Arm • Plates 421-425

421 Muscles of Arm: Anterior Views
422 Muscles of Arm: Posterior Views
423 Brachial Artery in Situ
424 Arteries of Arm and Proximal Forearm
425 Arm: Serial Cross Sections

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426 Bones of Elbow
427 Elbow: Radiographs
428 Ligaments of Elbow
429 Bones of Forearm
430 Individual Muscles of Forearm: Rotators of Radius
431 Individual Muscles of Forearm: Extensors of Wrist and Digits
432 Individual Muscles of Forearm: Flexors of Wrist
433 Individual Muscles of Forearm: Flexors of Digits
434 Muscles of Forearm (Superficial Layer): Posterior View
435 Muscles of Forearm (Deeper Layer): Posterior View
436 Muscles of Forearm (Superficial Layer): Anterior View
437 Muscles of Forearm (Intermediate Layer): Anterior View
438 Muscles of Forearm (Deep Layer): Anterior View
439 Attachments of Muscles of Forearm: Anterior View
440 Attachments of Muscles of Forearm: Posterior View
441 Forearm: Serial Cross Sections, Anterior View

Wrist and Hand • Plates 442-461

442 Carpal Bones
443 Movements of Wrist
444 Ligaments of Wrist
445 Ligaments of Wrist (continued)
446 Bones of Wrist and Hand
447 Wrist and Hand: Radiographs

448 Metacarpophalangeal and Interphalangeal Ligaments
449 Wrist and Hand: Superficial Palmar Dissections
450 Wrist and Hand: Deeper Palmar Dissections
451 Lumbrical Muscles and Bursae, Spaces, and Sheaths: Schema
452 Flexor Tendons, Arteries, and Nerves at Wrist
453 Bursae, Spaces, and Tendon Sheaths of Hand
454 Flexor and Extensor Tendons in Fingers
455 Intrinsic Muscles of Hand
456 Arteries and Nerves of Hand: Palmar Views
457 Wrist and Hand: Superficial Dissection
458 Wrist and Hand: Superficial Dorsal Dissection
459 Nerves and Arteries of Dorsal Hand and Wrist
460 Extensor Tendons at Wrist
461 Fingers

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464 Nerves of Upper Limb
465 Musculocutaneous Nerve: Anterior View
466 Median Nerve
467 Ulnar Nerve
468 Radial Nerve in Arm and Nerves of Posterior Shoulder: Posterior View
469 Radial Nerve in Forearm and Hand

Regional Imaging • Plate 470

470 Shoulder MRI and CT Scan

Structures with High Clinical Significance • Tables 7.1-7.2

Muscle Tables • Tables 7.3-7.6

Electronic Bonus Plates • Plates BP99-BP106

BP99 Veins of Upper Limb
BP100 Arteries of Arm and Proximal Forearm
BP101 Arteries of Forearm and Hand
BP102 Ligaments of Wrist
BP103 Flexor and Extensor Zones of Hand
BP104 Section Through Metacarpal and Distal Carpal Bones
BP105 Cross Section of Hand: Axial View
BP106 Cross Section of Hand: Axial View (continued)

SECTION 8 LOWER LIMB • Plates 471-535

Surface Anatomy • Plate 471

471 Lower Limb: Surface Anatomy

Cutaneous Anatomy • Plates 472-475

472 Dermatomes of Lower Limb and Segmental Nerve Function
473 Superficial Nerves and Veins of Lower Limb: Anterior View
474 Superficial Nerves and Veins of Lower Limb: Posterior View
475 Lymph Vessels and Nodes of Lower Limb

Hip and Thigh • Plates 476-496

476 Coxal Bone
477 Hip Joint
478 Hip Joint: Anteroposterior Radiograph
479 Femur
480 Bony Attachments of Muscles of Hip and Thigh: Anterior View
481 Bony Attachments of Muscles of Hip and Thigh: Posterior View
482 Muscles of Thigh: Anterior Views
483 Muscles of Thigh: Anterior Views (continued)
484 Muscles of Hip and Thigh: Lateral View
485 Muscles of Hip and Thigh: Posterior Views
486 Psoas and Iliacus Muscles
487 Lumbosacral and Coccygeal Plexuses
488 Lumbar Plexus
489 Sacral and Coccygeal Plexuses
490 Arteries and Nerves of Thigh: Anterior Views
491 Arteries and Nerves of Thigh: Anterior Views (continued)
492 Arteries and Nerves of Thigh: Posterior View
493 Nerves of Hip and Buttock
494 Hip Bursae: Posterior and Anterolateral Views
495 Arteries of Femoral Head and Neck
496 Thigh: Serial Cross Sections

Knee • Plates 497-503

497 Knee: Medial and Lateral Views
498 Knee: Anterior Views
499 Knee: Interior Views
500 Knee: Cruciate and Collateral Ligaments
501 Knee: Anteroposterior Radiograph and Posterior View
502 Knee: Posterior and Sagittal Views
503 Arteries of Lower Limb: Schema

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504 Tibia and Fibula
505 Tibia and Fibula (continued)
506 Attachments of Muscles of Leg
507 Muscles of Leg (Superficial Dissection): Posterior View
508 Muscles of Leg (Intermediate Dissection): Posterior View
509 Muscles of Leg (Deep Dissection): Posterior View
510 Muscles of Leg: Lateral View
511 Muscles of Leg (Superficial Dissection): Anterior View
512 Muscles of Leg (Deep Dissection): Anterior View
513 Venous Drainage of Leg
514 Leg: Cross Sections and Fascial Compartments

Ankle and Foot • Plates 515-528

515 Bones of Foot
516 Bones of Foot (continued)
517 Calcaneus
518 Ligaments and Tendons of Ankle
519 Ligaments and Tendons of Foot: Plantar View
520 Tendon Sheaths of Ankle
521 Muscles of Dorsum of Foot: Superficial Dissection
522 Dorsum of Foot: Deep Dissection
523 Plantar Region of Foot: Superficial Dissection
524 Muscles of Plantar Region of Foot: First Layer
525 Muscles of Plantar Region of Foot: Second Layer
526 Muscles of Plantar Region of Foot: Third Layer
527 Interosseous Muscles and Deep Arteries of Foot
528 Interosseous Muscles of Foot

Neurovasculature • Plates 529-533

529 Femoral Nerve and Lateral Femoral Cutaneous Nerve
530 Obturator Nerve
531 Sciatic Nerve and Posterior Femoral Cutaneous Nerve
532 Tibial Nerve
533 Common Fibular Nerve

Regional Imaging • Plates 534-535

534 Hip MRI and 3D CT
535 Ankle: Radiographs

Structures with High Clinical Significance • Tables 8.1-8.2

Muscle Tables • Tables 8.3-8.6

Electronic Bonus Plates • Plates BP107-BP117

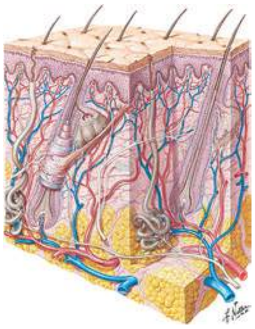
BP107 Veins of Lower Limb
BP108 Arteries of Thigh and Knee
BP109 Cross-Sectional Anatomy of Hip: Axial View
BP110 Arteries of Knee and Foot
BP111 Leg: Serial Cross Sections
BP112 Osteology of Knee
BP113 Knee Radiograph: Lateral View
BP114 Anatomy of Foot: Nerves and Arteries
BP115 Cross-Sectional Anatomy of Ankle and Foot
BP116 Cross-Sectional Anatomy of Ankle and Foot (continued)
BP117 Anatomy of Toenail

INTRODUCTION

1

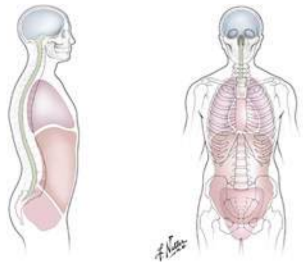
Introduction 1-7

ELECTRONIC BONUS PLATES



BP 1 Cross Section of Skin

BP 2 Pilosebaceous Unit

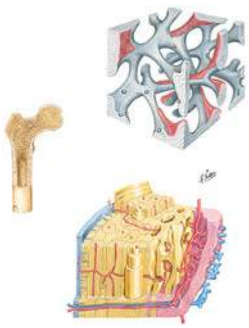


BP 3 Major Body Cavities

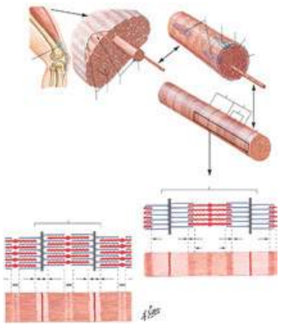
BP 4 Skeletal System: Axial and Appendicular Skeletons

BP 5 Types of Synovial Joints

BP 6 Joints: Connective Tissues and Articular Cartilage



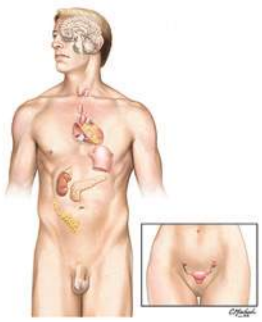
BP 7 Architecture of Bone



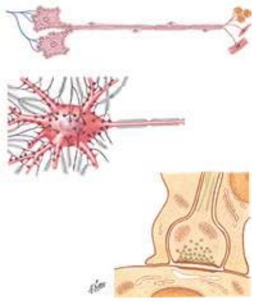
BP 8 Muscular System

ELECTRONIC BONUS PLATES—*cont'd*

BP 9 Overview of the Digestive System

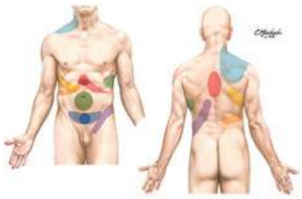


BP 10 Overview of the Endocrine System

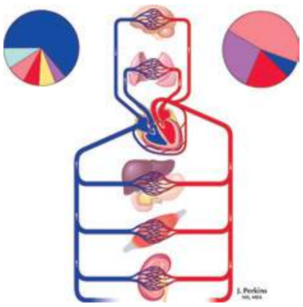


BP 11 Neurons and Synapses

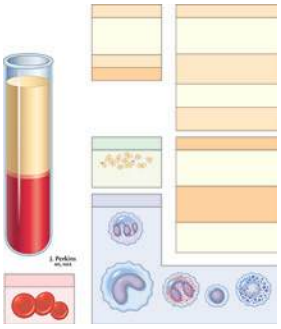
BP 12 Features of a Typical Peripheral Nerve



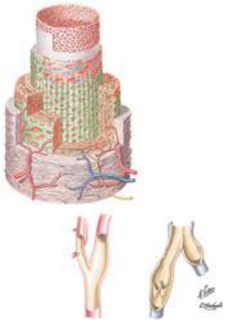
BP 13 Sites of Visceral Referred Pain



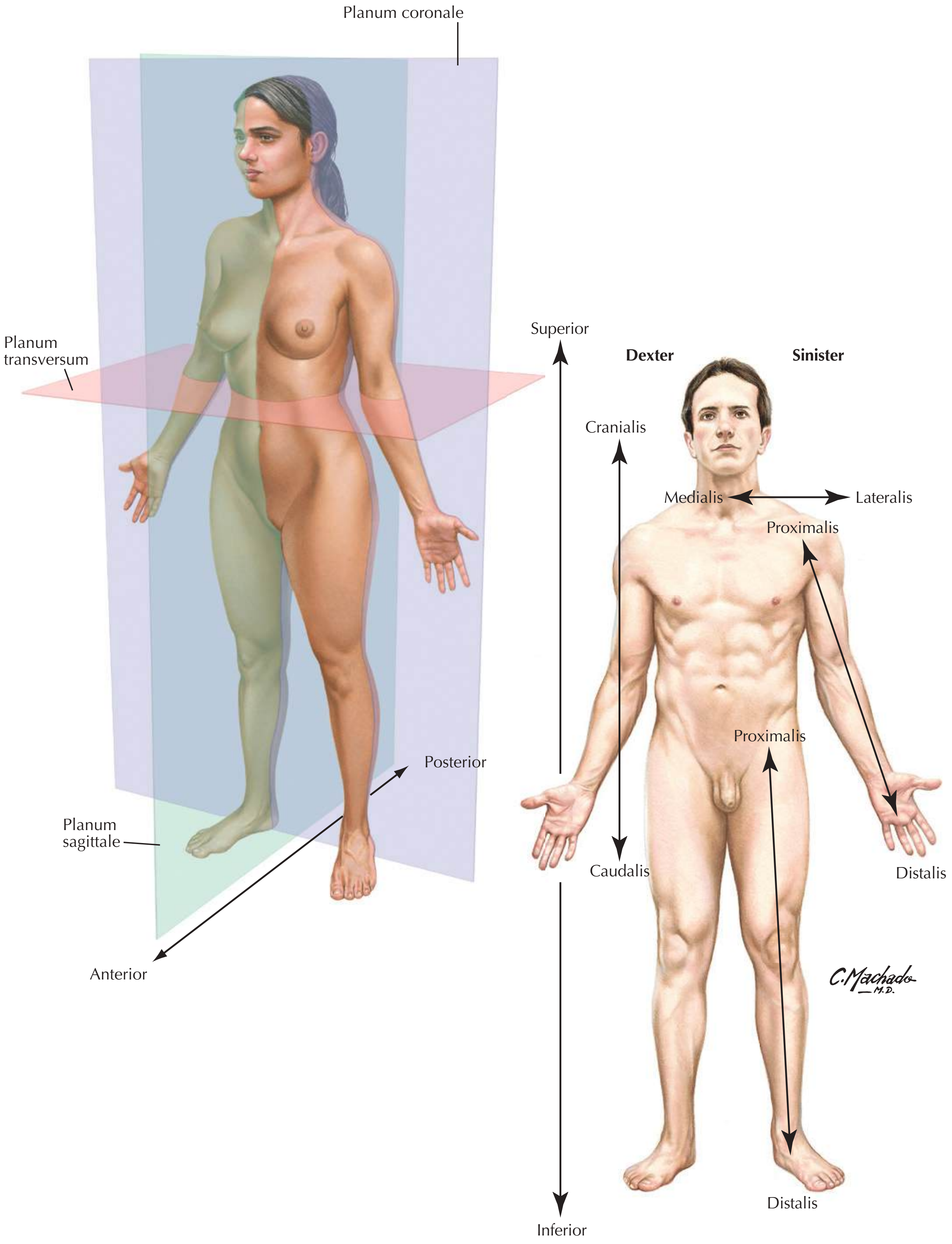
BP 14 General Organization of the Cardiovascular System



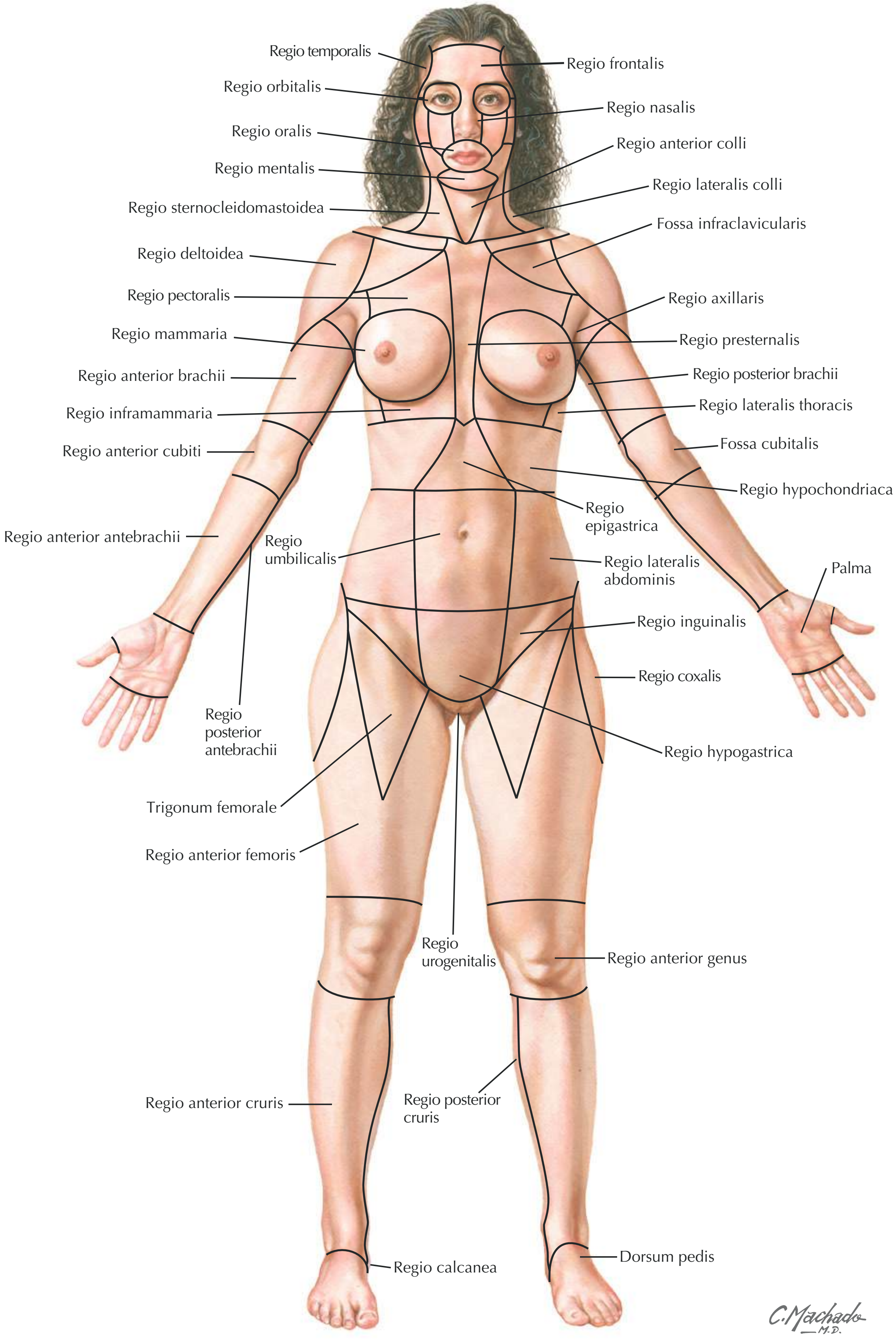
BP 15 Cardiovascular System: Composition of Blood

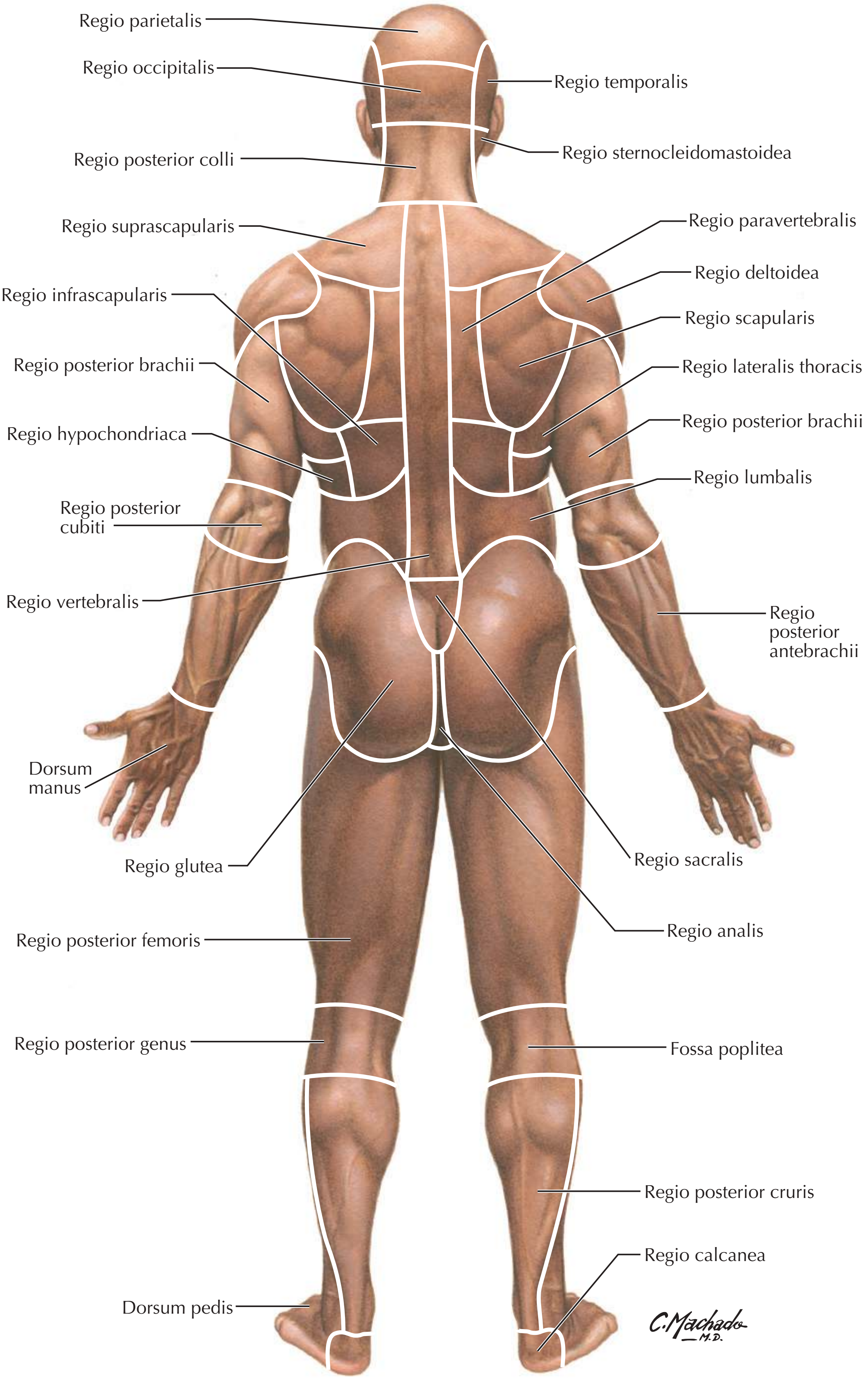


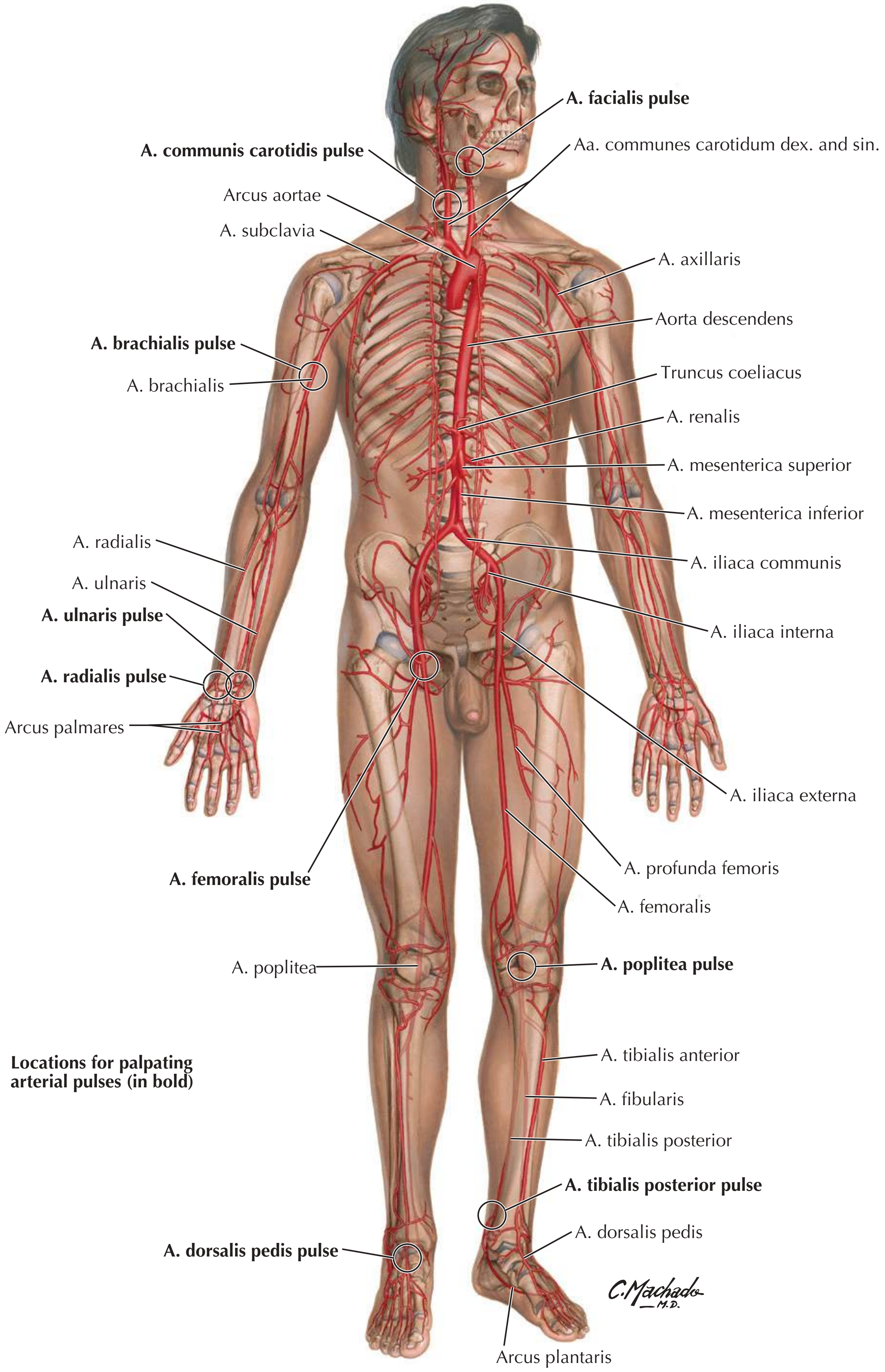
BP 16 Arterial Wall


Planum coronale
Planum transversum
Posterior
Planum sagittale
Anterior
Superior
Dexter
Sinister
Cranialis
Medialis
Lateralis
Proximalis
Proximalis
Caudalis
Distalis
Distalis
Inferior

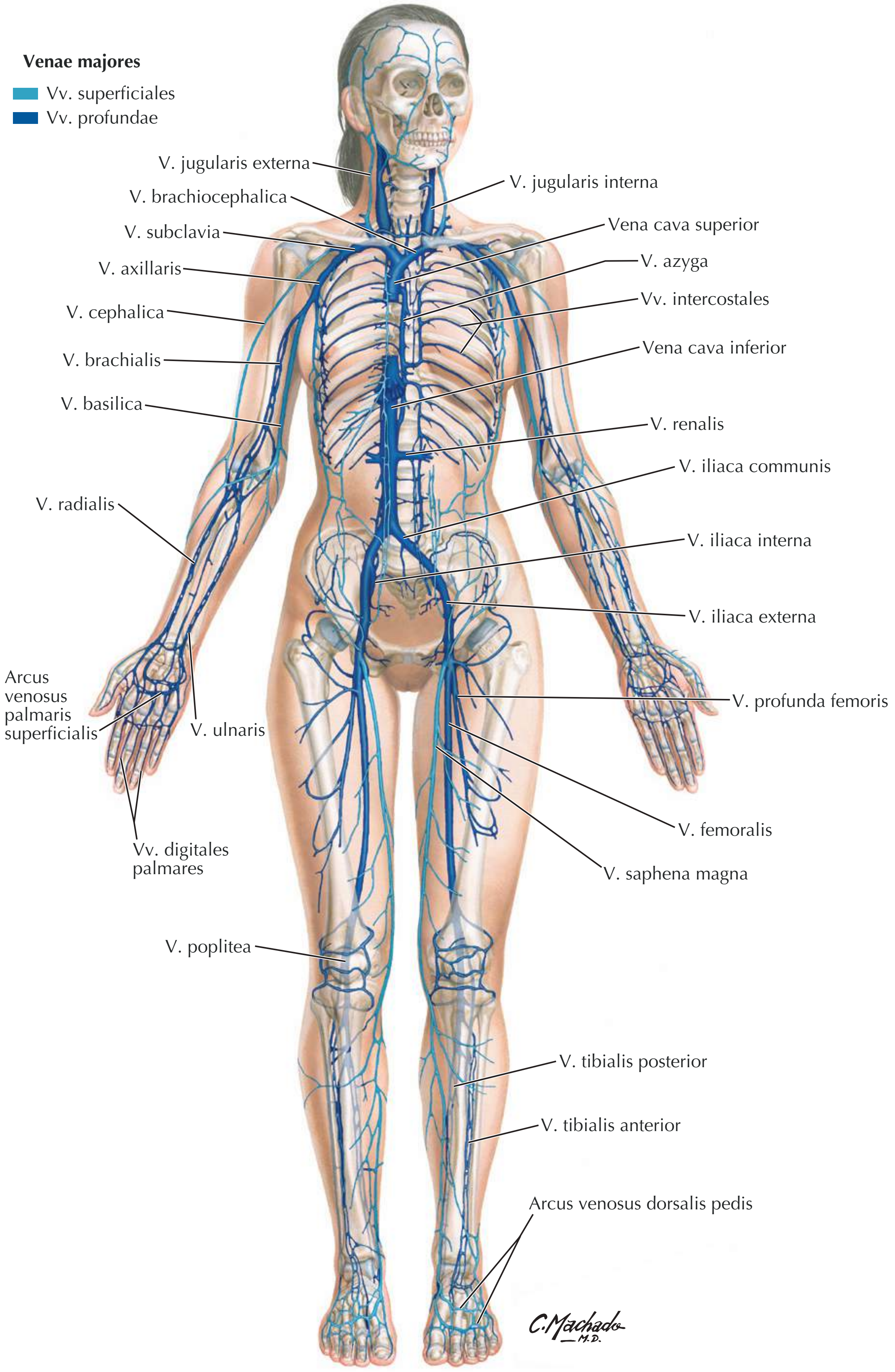
Surface Anatomy: Regions (Anterior View of Female)


Regio temporalis
Regio frontalis
Regio orbitalis
Regio nasalis
Regio oralis
Regio anterior colli
Regio mentalis
Regio lateralis colli
Regio sternocleidomastoidea
Fossa infraclavicularis
Regio deltoidea
Regio pectoralis
Regio axillaris
Regio mammaria
Regio presternalis
Regio anterior brachii
Regio posterior brachii
Regio inframammaria
Regio lateralis thoracis
Regio anterior cubiti
Fossa cubitalis
Regio hypochondriaca
Regio epigastrica
Regio anterior antebrachii
Regio umbilicalis
Regio lateralis abdominis
Palma
Regio inguinalis
Regio coxalis
Regio posterior antebrachii
Regio hypogastrica
Trigonum femorale
Regio anterior femoris
Regio urogenitalis
Regio anterior genus
Regio anterior cruris
Regio posterior cruris
Regio calcanea
Dorsum pedis
C. Machado M.D.

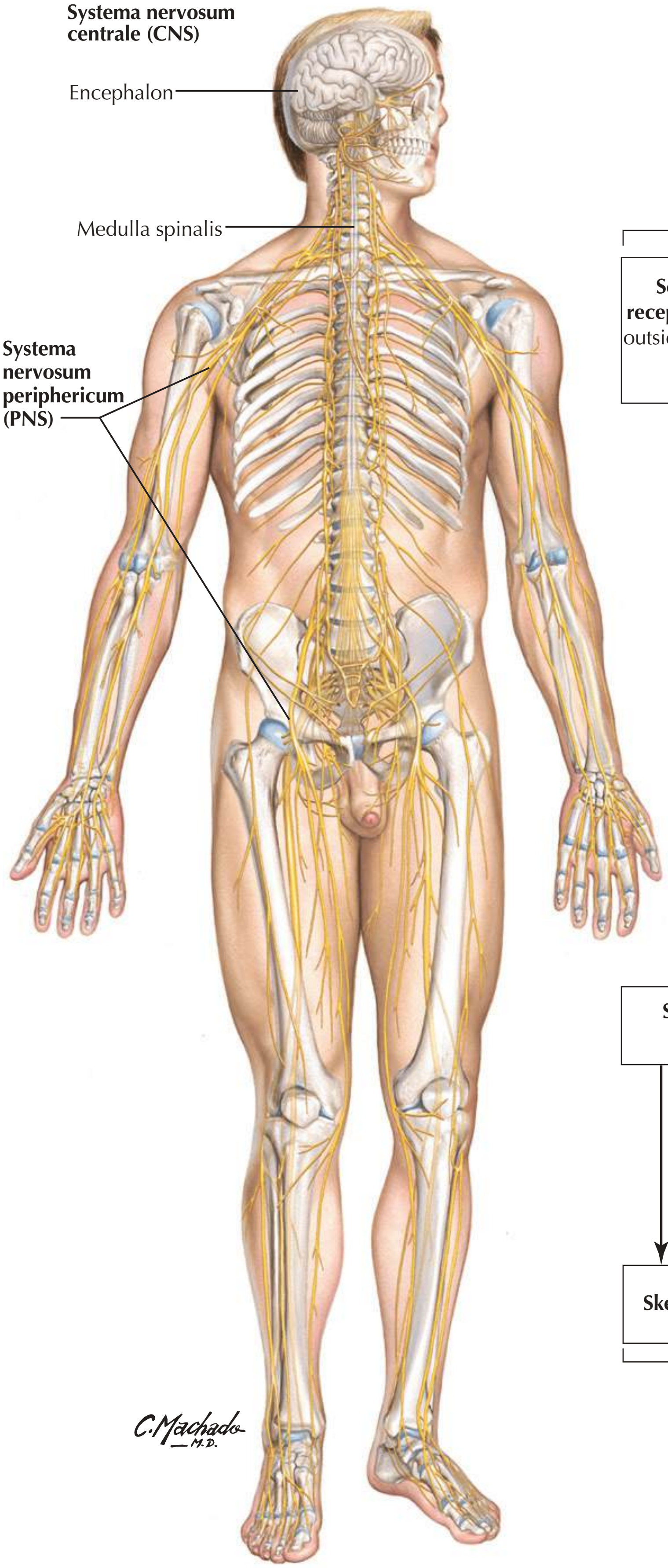

Regio parietalis
Regio occipitalis
Regio temporalis
Regio sternocleidomastoidea
Regio posterior colli
Regio suprascapularis
Regio paravertebralis
Regio deltoidea
Regio infrascapularis
Regio scapularis
Regio posterior brachii
Regio lateralis thoracis
Regio hypochondriaca
Regio posterior brachii
Regio lumbalis
Regio posterior cubiti
Regio vertebralis
Regio posterior antebrachii
Dorsum manus
Regio sacralis
Regio glutea
Regio analis
Regio posterior femoris
Regio posterior genus
Fossa poplitea
Regio posterior cruris
Regio calcanea
Dorsum pedis
C. Machado M.D.

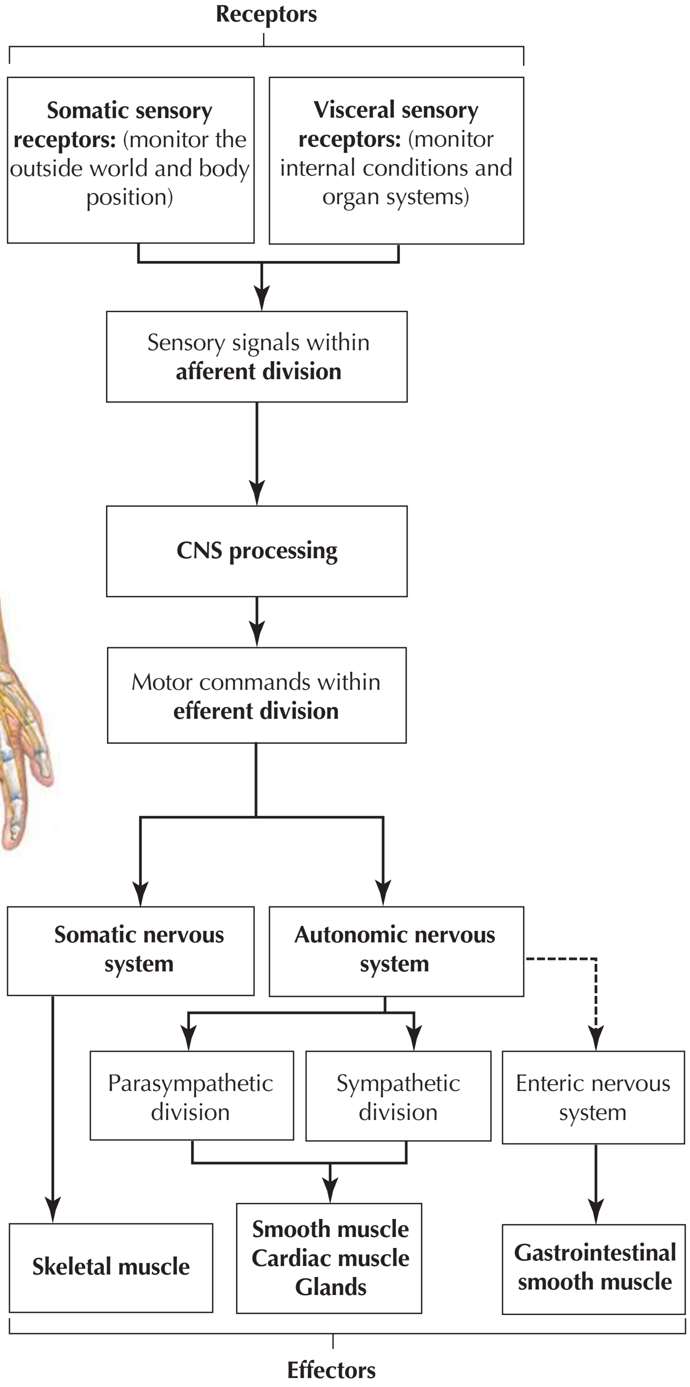

A. facialis pulse
Aa. communes carotidum dex. and sin.
A. communis carotidis pulse
Arcus aortae
A. subclavia
A. axillaris
Aorta descendens
A. brachialis pulse
A. brachialis
Truncus coeliacus
A. renalis
A. mesenterica superior
A. mesenterica inferior
A. radialis
A. iliaca communis
A. ulnaris
A. ulnaris pulse
A. iliaca interna
A. radialis pulse
Arcus palmares
A. iliaca externa
A. profunda femoris
A. femoralis pulse
A. femoralis
A. poplitea
A. poplitea pulse
A. tibialis anterior
A. fibularis
A. tibialis posterior
A. tibialis posterior pulse
A. dorsalis pedis
A. dorsalis pedis pulse
C. Machado M.D.
Arcus plantaris

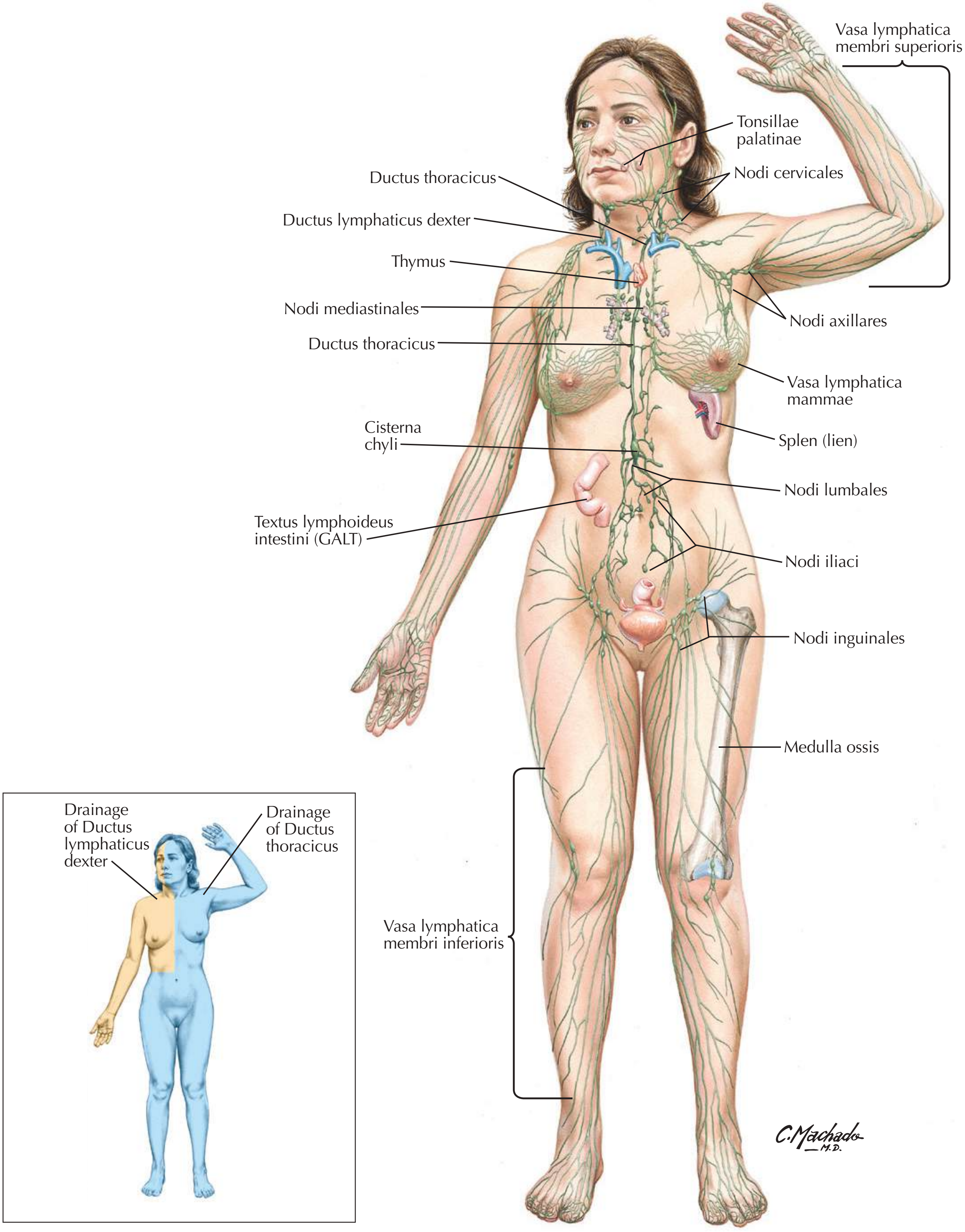
Locations for palpating arterial pulses (in bold)

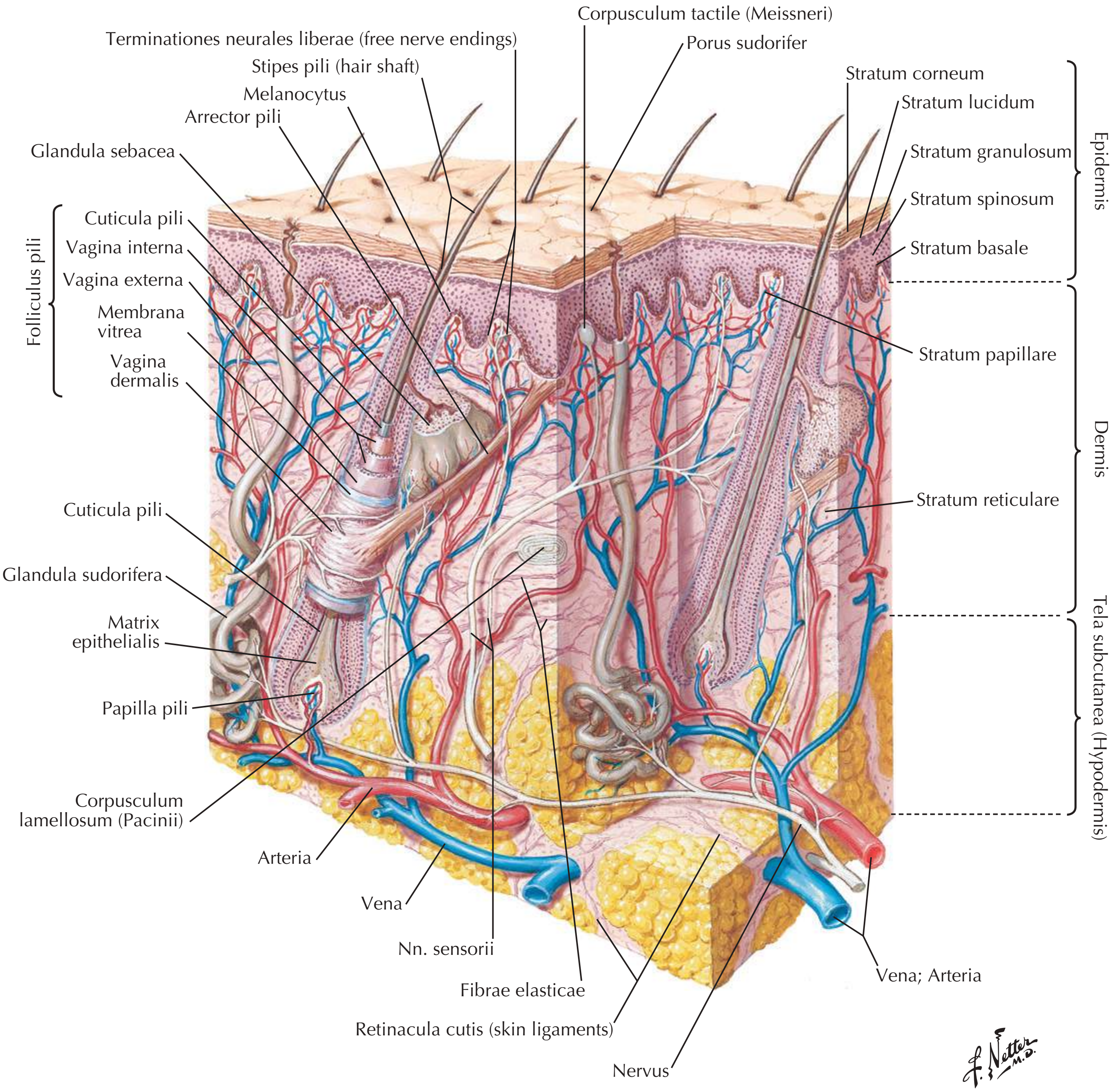

Venae majores
Vv. superficiales
Vv. profundae
V. jugularis externa
V. brachiocephalica
V. subclavia
V. axillaris
V. cephalica
V. brachialis
V. basilica
V. radialis
Arcus venosus palmaris superficialis
V. ulnaris
Vv. digitales palmares
V. poplitea
V. jugularis interna
Vena cava superior
V. azyga
Vv. intercostales
Vena cava inferior
V. renalis
V. iliaca communis
V. iliaca interna
V. iliaca externa
V. profunda femoris
V. femoralis
V. saphena magna
V. tibialis posterior
V. tibialis anterior
Arcus venosus dorsalis pedis

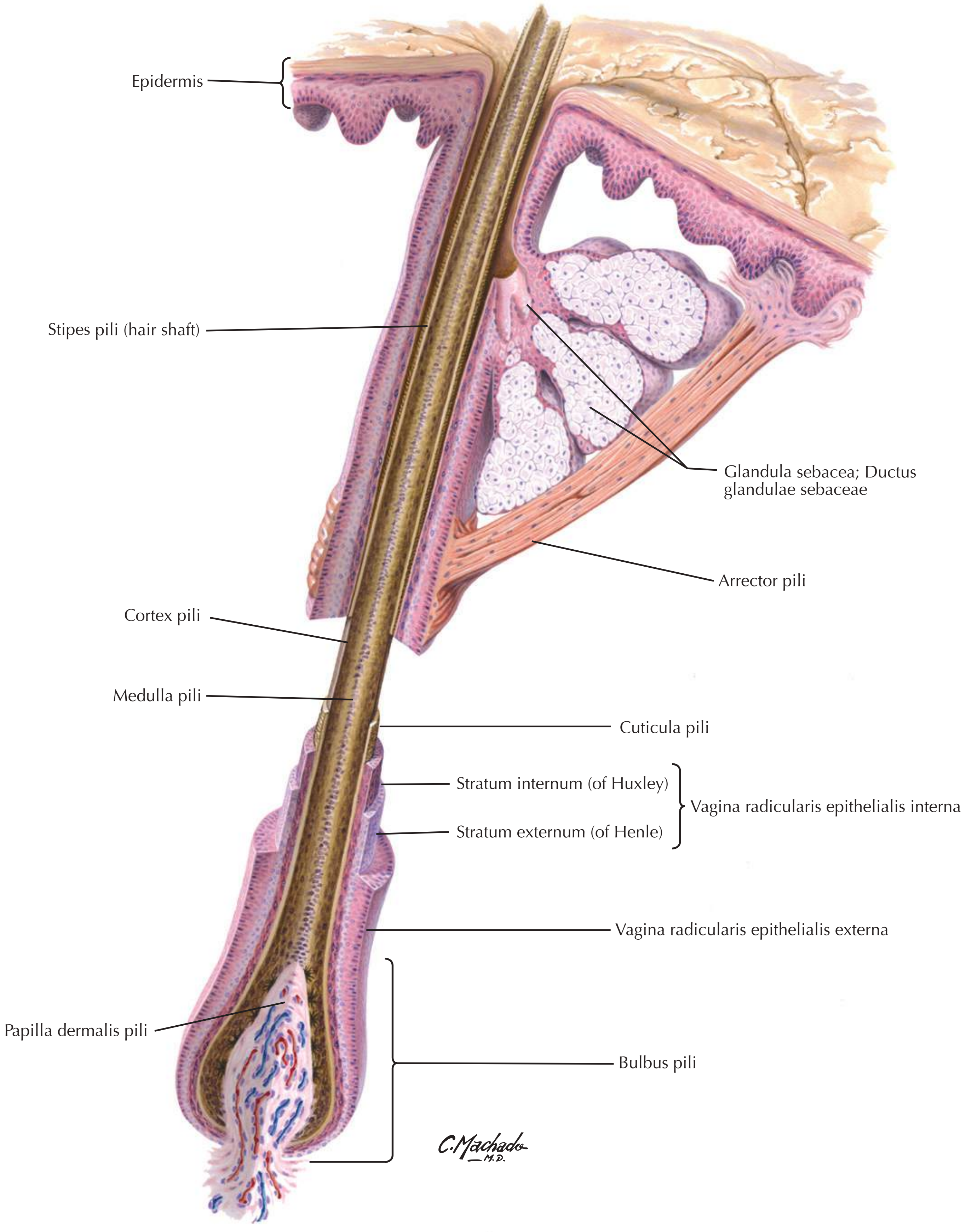
General Organization of the Nervous System

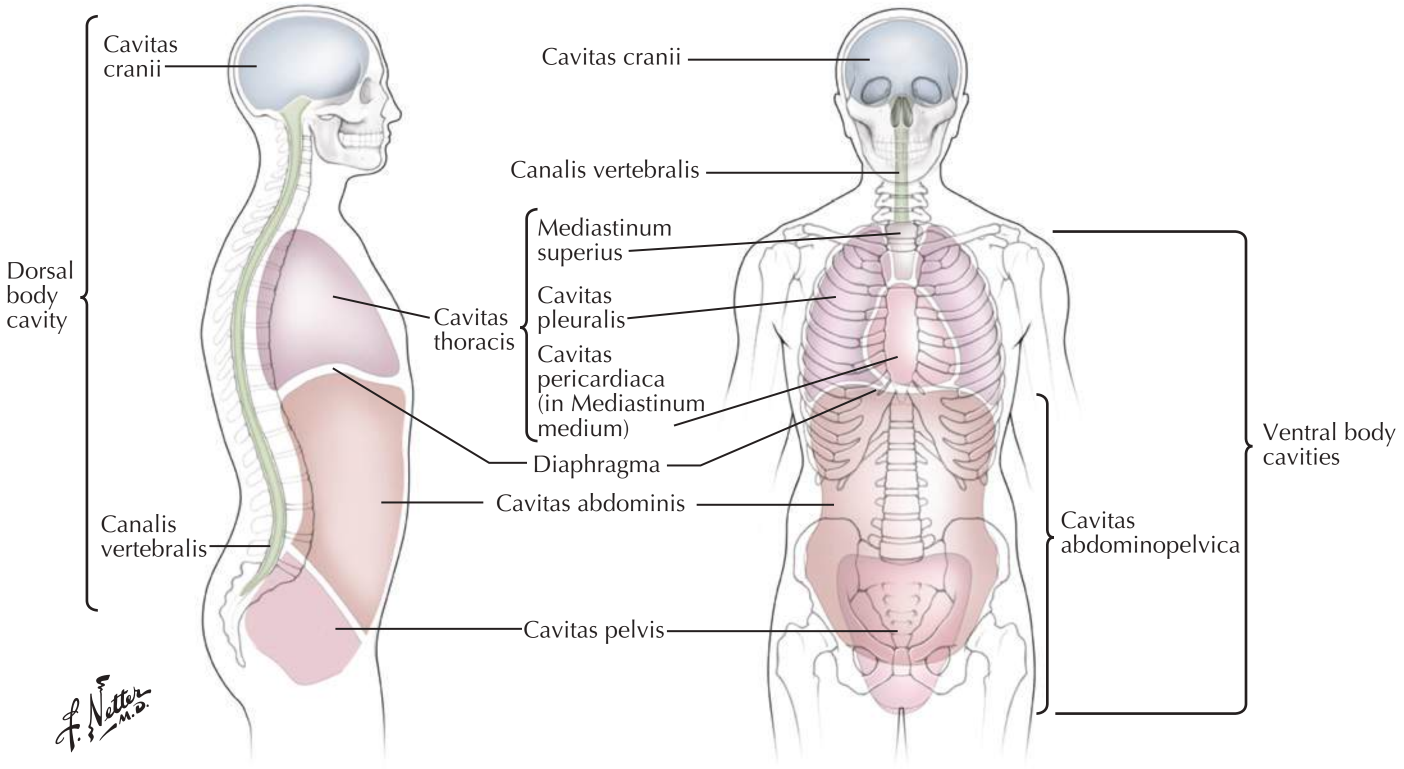

Systema nervosum centrale (CNS)
Encephalon
Medulla spinalis
Systema nervosum periphericum (PNS)


Receptors
Somatic sensory receptors: (monitor the outside world and body position)
Visceral sensory receptors: (monitor internal conditions and organ systems)
Sensory signals within afferent division
CNS processing
Motor commands within efferent division
Somatic nervous system
Autonomic nervous system
Parasympathetic division
Sympathetic division
Enteric nervous system
Skeletal muscle
Smooth muscle
Cardiac muscle
Glands
Gastrointestinal smooth muscle
Effectors

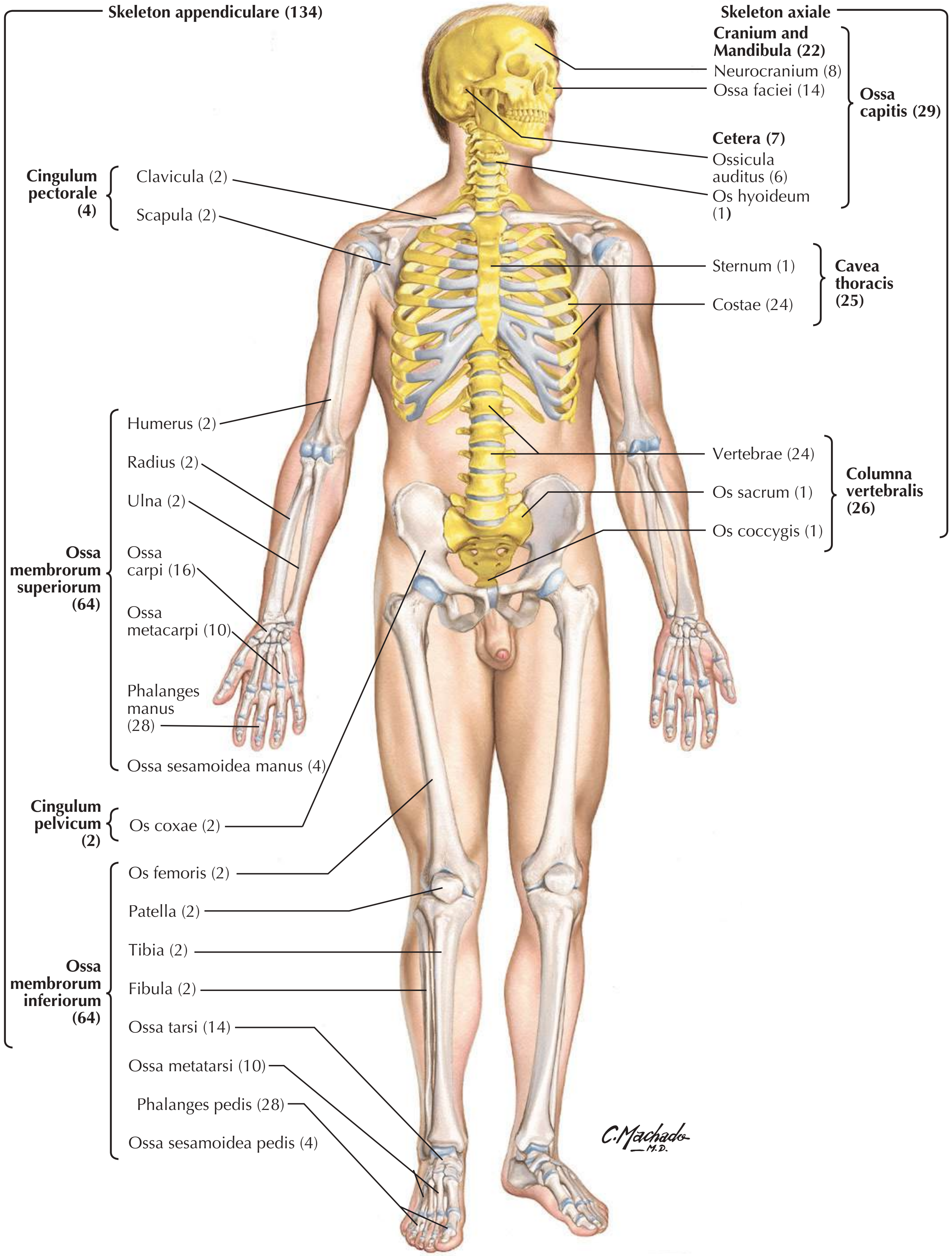

Vasa lymphatica membri superioris
Tonsillae palatinae
Ductus thoracicus
Nodi cervicales
Ductus lymphaticus dexter
Thymus
Nodi mediastinales
Nodi axillares
Ductus thoracicus
Vasa lymphatica mammae
Cisterna chyli
Splen (lien)
Nodi lumbales
Textus lymphoideus intestini (GALT)
Nodi iliaci
Nodi inguinales
Medulla ossis
Drainage of Ductus lymphaticus dexter
Drainage of Ductus thoracicus
Vasa lymphatica membri inferioris
C.Machado M.D.


Corpusculum tactile (Meissneri)
Terminationes neurales liberae (free nerve endings)
Porus sudorifer
Stipes pili (hair shaft)
Melanocytus
Arrector pili
Glandula sebacea
Stratum corneum
Stratum lucidum
Stratum granulosum
Stratum spinosum
Stratum basale
Epidermis
Folliculus pili
Cuticula pili
Vagina interna
Vagina externa
Membrana vitrea
Vagina dermalis
Stratum papillare
Dermis
Stratum reticulare
Cuticula pili
Glandula sudorifera
Matrix epithelialis
Papilla pili
Tela subcutanea (Hypodermis)
Corpusculum lamellosum (Pacinii)
Arteria
Vena
Nn. sensorii
Fibrae elasticae
Retinacula cutis (skin ligaments)
Nervus
Vena; Arteria
F. Netter M.D.

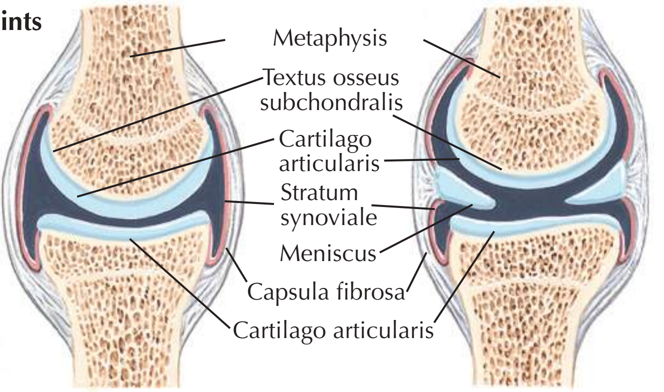

Epidermis
Stipes pili (hair shaft)
Glandula sebacea; Ductus glandulae sebaceae
Arrector pili
Cortex pili
Medulla pili
Cuticula pili
Stratum internum (of Huxley)
Vagina radicularis epithelialis interna
Stratum externum (of Henle)
Vagina radicularis epithelialis externa
Papilla dermalis pili
Bulbus pili
C. Machado M.D.

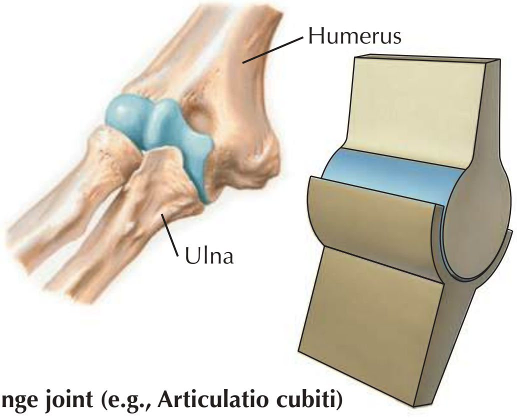

Dorsal body cavity
Cavitas cranii
Canalis vertebralis
Cavitas thoracis
Diaphragma
Cavitas abdominis
Cavitas pelvis
Cavitas cranii
Canalis vertebralis
Mediastinum superius
Cavitas pleuralis
Cavitas pericardiaca (in Mediastinum medium)
Ventral body cavities
Cavitas abdominopelvica
F. Netter M.D.

Skeletal System: Axial and Appendicular Skeletons

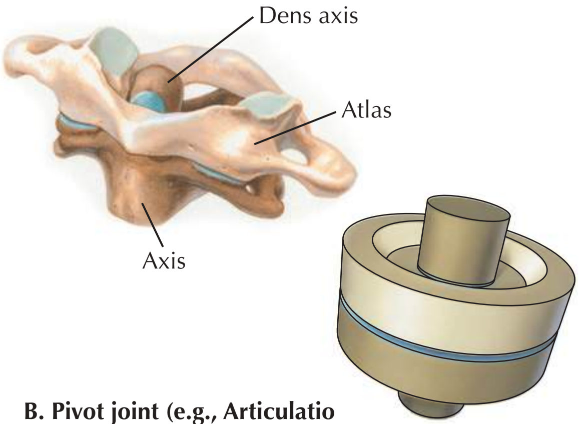

Skeleton appendiculare (134)
Cingulum pectorale (4)
Clavicula (2)
Scapula (2)
Ossa membrorum superiorum (64)
Humerus (2)
Radius (2)
Ulna (2)
Ossa carpi (16)
Ossa metacarpi (10)
Phalanges manus (28)
Ossa sesamoidea manus (4)
Cingulum pelvicum (2)
Os coxae (2)
Ossa membrorum inferiorum (64)
Os femoris (2)
Patella (2)
Tibia (2)
Fibula (2)
Ossa tarsi (14)
Ossa metatarsi (10)
Phalanges pedis (28)
Ossa sesamoidea pedis (4)
Skeleton axiale
Cranium and Mandibula (22)
Neurocranium (8)
Ossa faciei (14)
Ossa capitis (29)
Cetera (7)
Ossicula auditus (6)
Os hyoideum (1)
Sternum (1)
Costae (24)
Cavea thoracis (25)
Vertebrae (24)
Os sacrum (1)
Os coccygis (1)
Columna vertebralis (26)
C.Machado M.D.

Structure of synovial joints

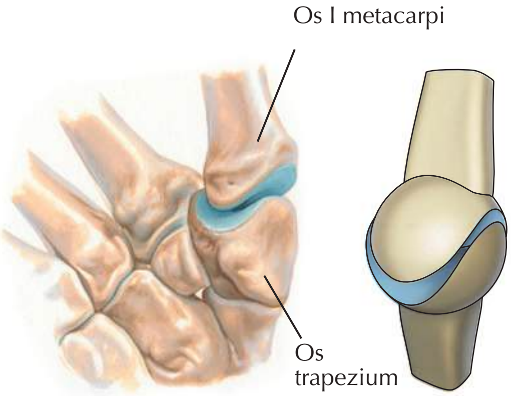

Metaphysis
Textus osseus subchondralis
Cartilago articularis
Stratum synoviale
Meniscus
Capsula fibrosa
Cartilago articularis


Humerus
Ulna

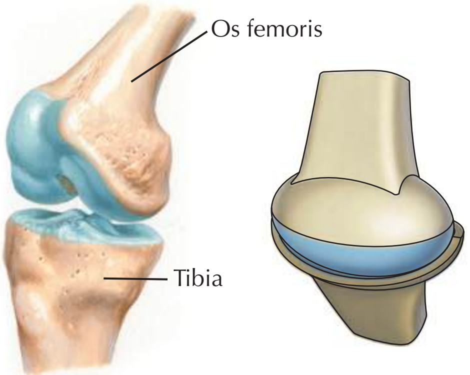
A. Hinge joint (e.g., Articulatio cubiti)


Dens axis
Atlas
Axis

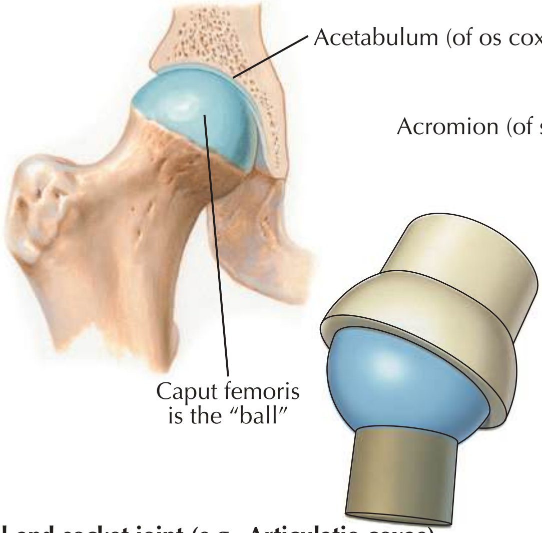
B. Pivot joint (e.g., Articulatio atlantoaxialis mediana)


Os I metacarpi
Os trapezium

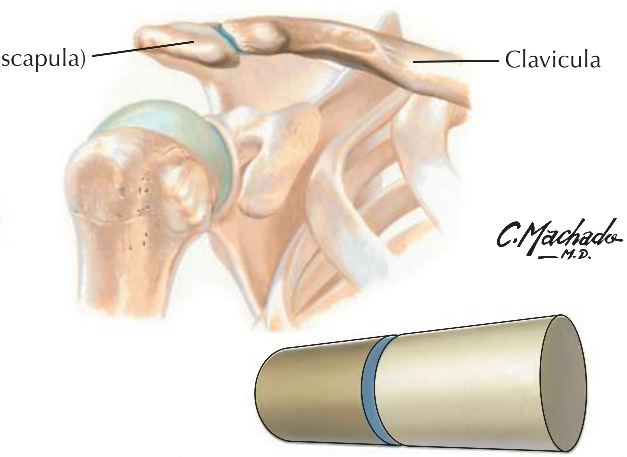
C. Saddle joint (e.g., Articulatio carpometacarpea pollicis)


Os femoris
Tibia

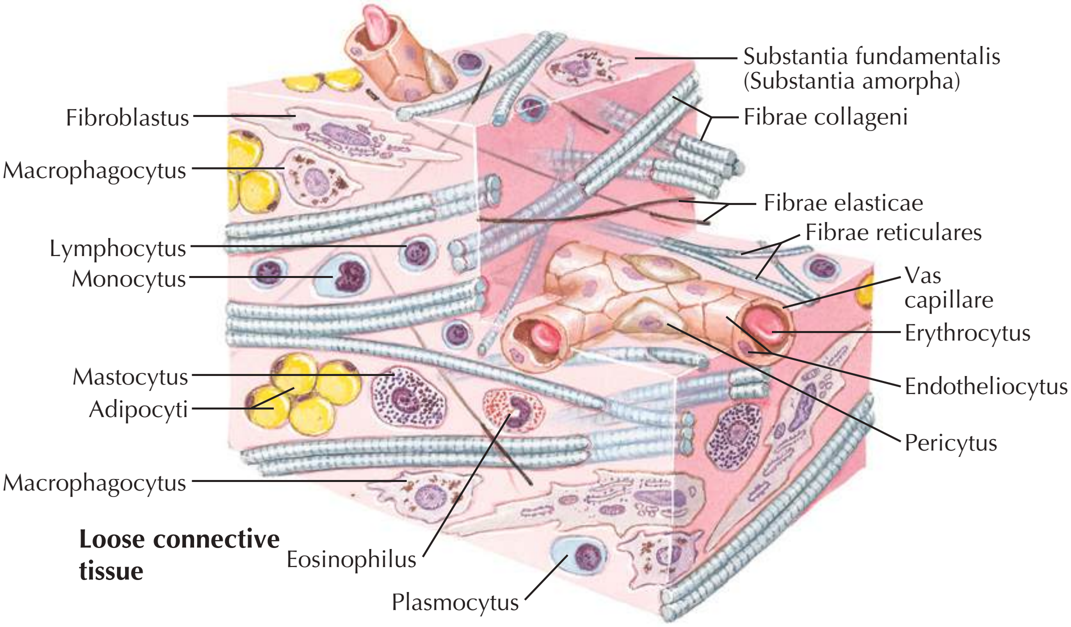
D. Condyloid joint (e.g., Articulatio genus)


Acetabulum (of os coxae) is the "socket"
Caput femoris is the "ball"

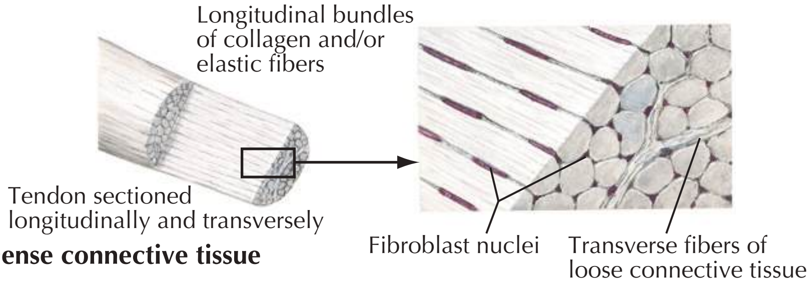
E. Ball-and-socket joint (e.g., Articulatio coxae)


Acromion (of scapula)
Clavicula

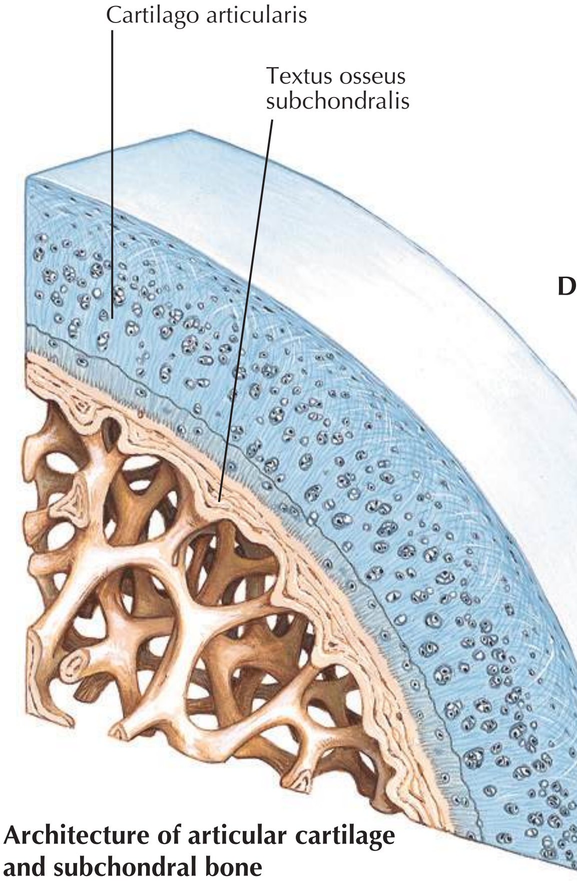
F. Plane joint (e.g., Articulatio acromioclavicularis)


Substantia fundamentalis
(Substantia amorpha)
Fibrae collageni
Fibroblastus
Macrophagocytus
Fibrae elasticae
Fibrae reticulares
Lymphocytus
Monocytus
Vas capillare
Erythrocytus
Endotheliocytus
Mastocytus
Adipocyti
Pericytus
Macrophagocytus
Eosinophilus
Plasmocytus

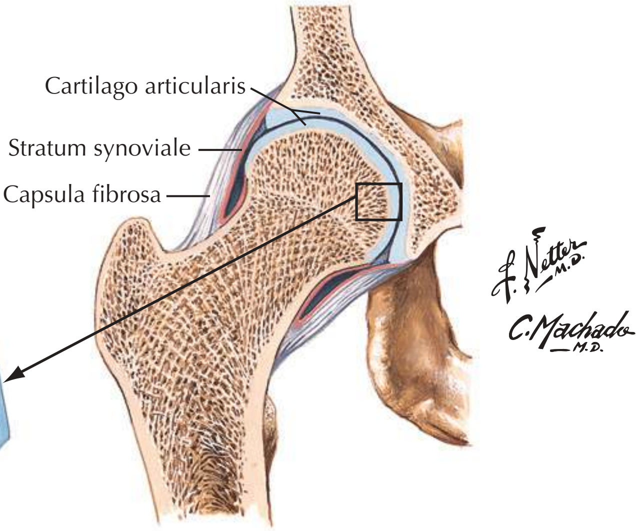
Loose connective tissue


Longitudinal bundles of collagen and/or elastic fibers
Tendon sectioned longitudinally and transversely
Fibroblast nuclei
Transverse fibers of loose connective tissue

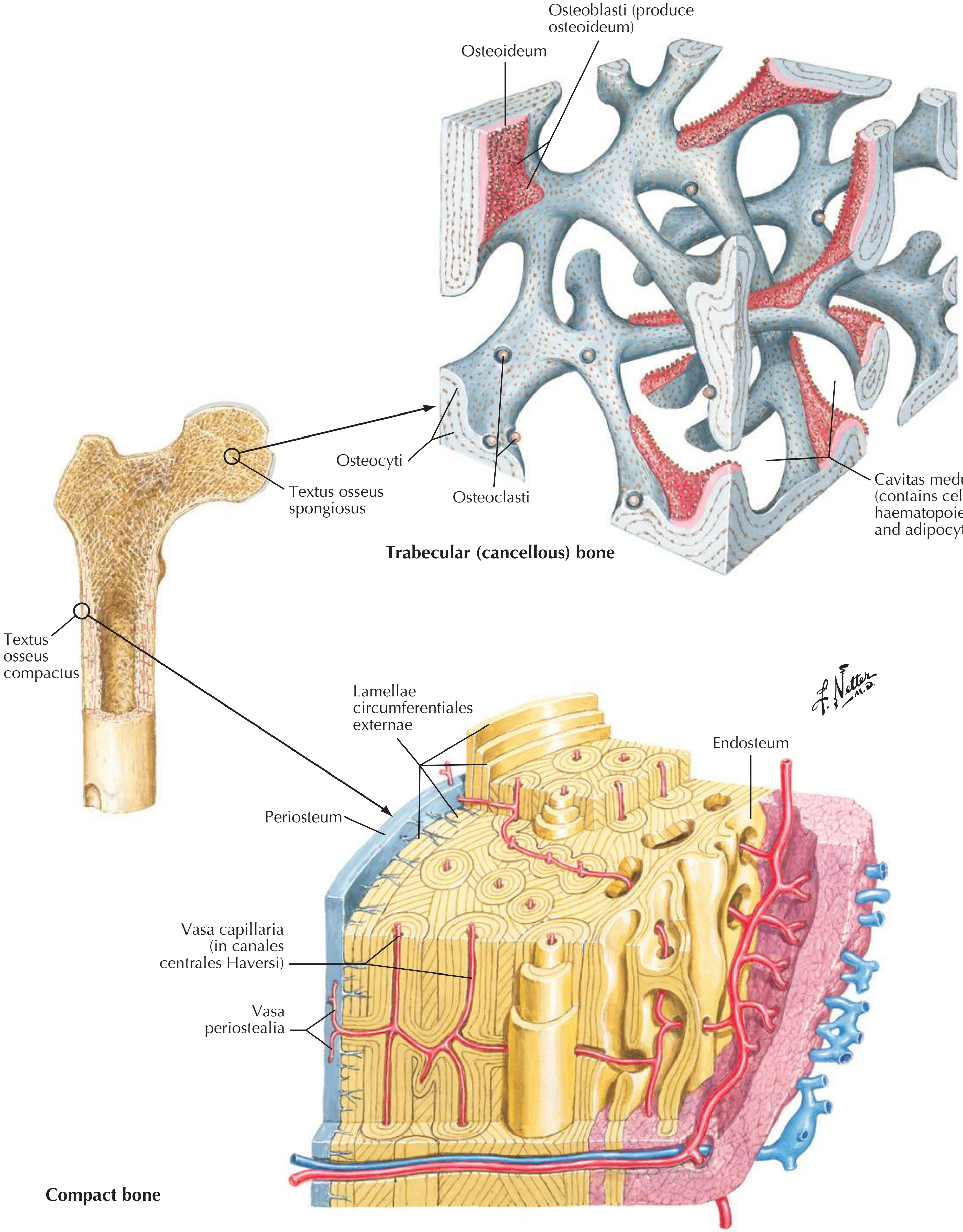
Dense connective tissue


Cartilago articularis
Textus osseus subchondralis

Architecture of articular cartilage and subchondral bone

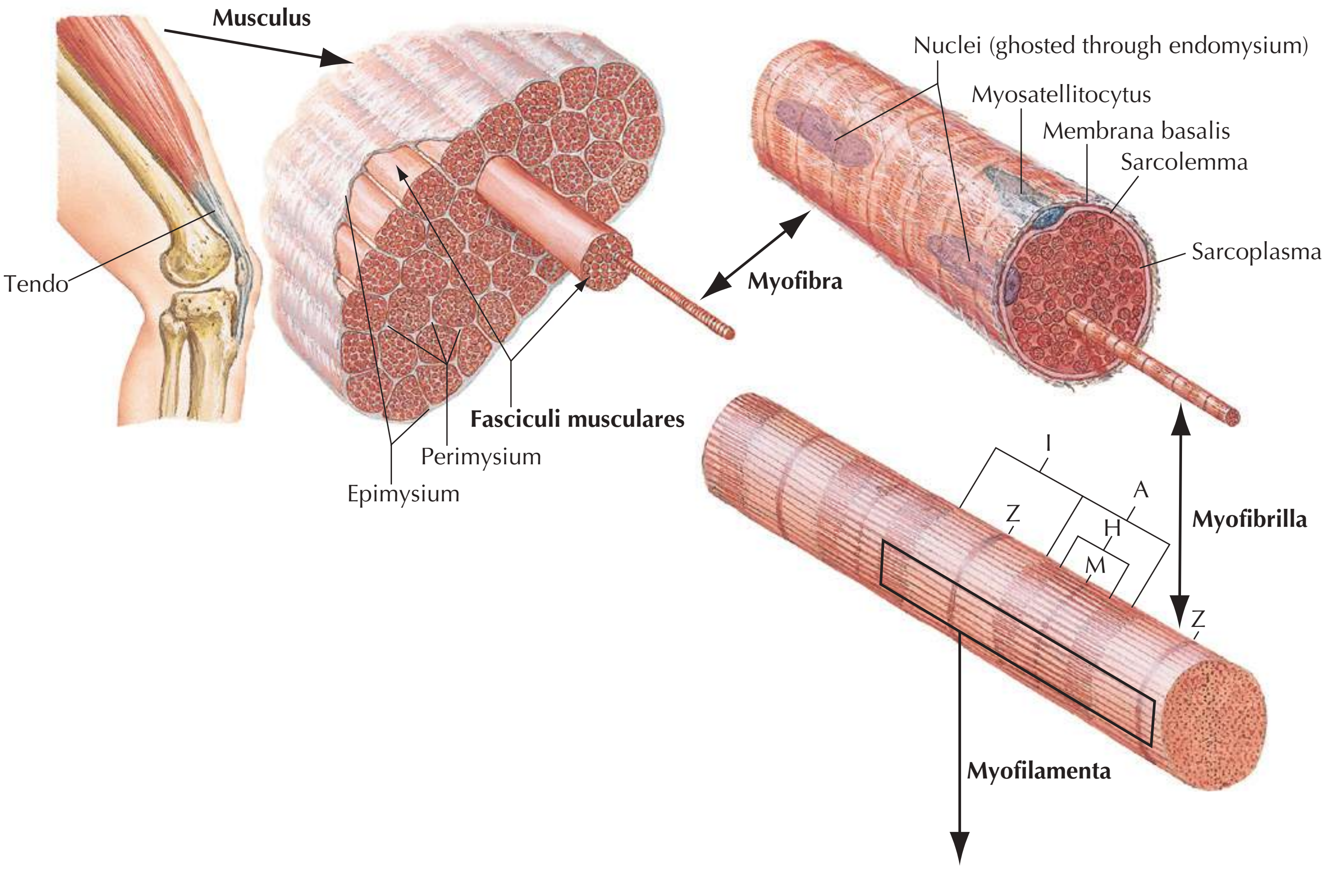

Cartilago articularis
Stratum synoviale
Capsula fibrosa

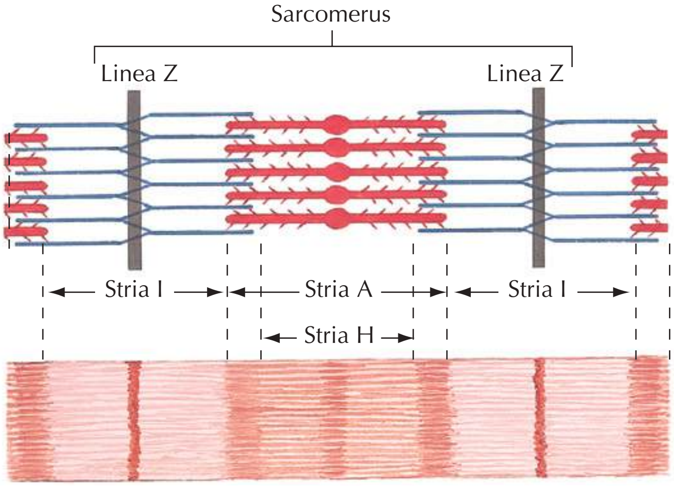
Synovial joint with cartilage-covered articular surfaces


Osteoblasti (produce osteoideum)
Osteoideum
Osteocyti
Textus osseus spongiosus
Osteoclasti
Cavitas medullaris (contains cellulae haematopoieticae and adipocyti)
Textus osseus compactus
Lamellae circumferentiales externae
Endosteum
Periosteum
Vasa capillaria (in canales centrales Haversi)
Vasa periostealia

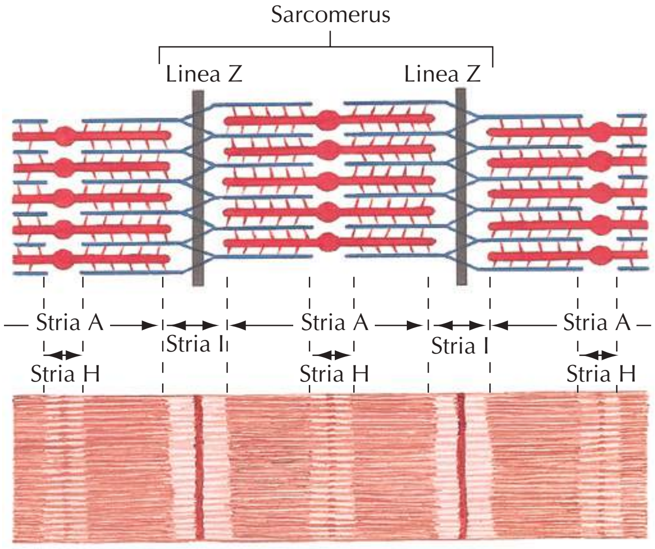
Trabecular (cancellous) bone

Compact bone

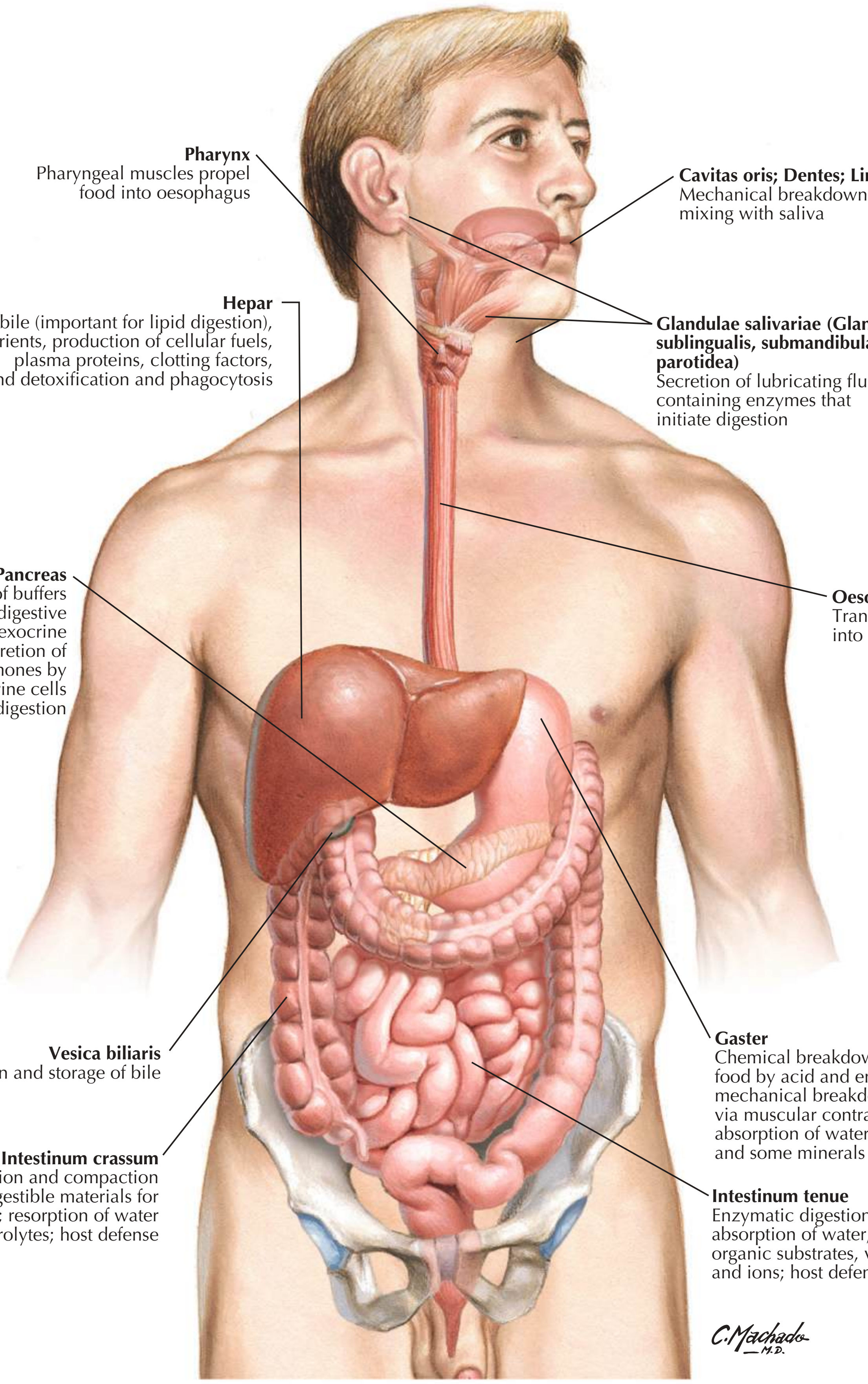

Musculus
Tendo
Fasciculi musculares
Perimysium
Epimysium
Myofibra
Nuclei (ghosted through endomysium)
Myosatellitocytus
Membrana basalis
Sarcolemma
Sarcoplasma
I
A
Z
H
M
Z
Myofibrilla
Myofilamenta


Sarcomerus
Linea Z
Linea Z
Stria I
Stria A
Stria I
Stria H

Muscle relaxed


Sarcomerus
Linea Z
Linea Z
Stria A
Stria I
Stria A
Stria I
Stria A
Stria H
Stria H
Stria H

Muscle contracted



Pharynx
Pharyngeal muscles propel food into oesophagus

Hepar
Secretion of bile (important for lipid digestion), storage of nutrients, production of cellular fuels, plasma proteins, clotting factors, and detoxification and phagocytosis

Pancreas
Secretion of buffers and digestive enzymes by exocrine cells; secretion of hormones by endocrine cells to regulate digestion

Vesica biliaris
Concentration and storage of bile

Intestinum crassum
Dehydration and compaction of indigestible materials for elimination; resorption of water and electrolytes; host defense

Cavitas oris; Dentes; Lingua
Mechanical breakdown, mixing with saliva

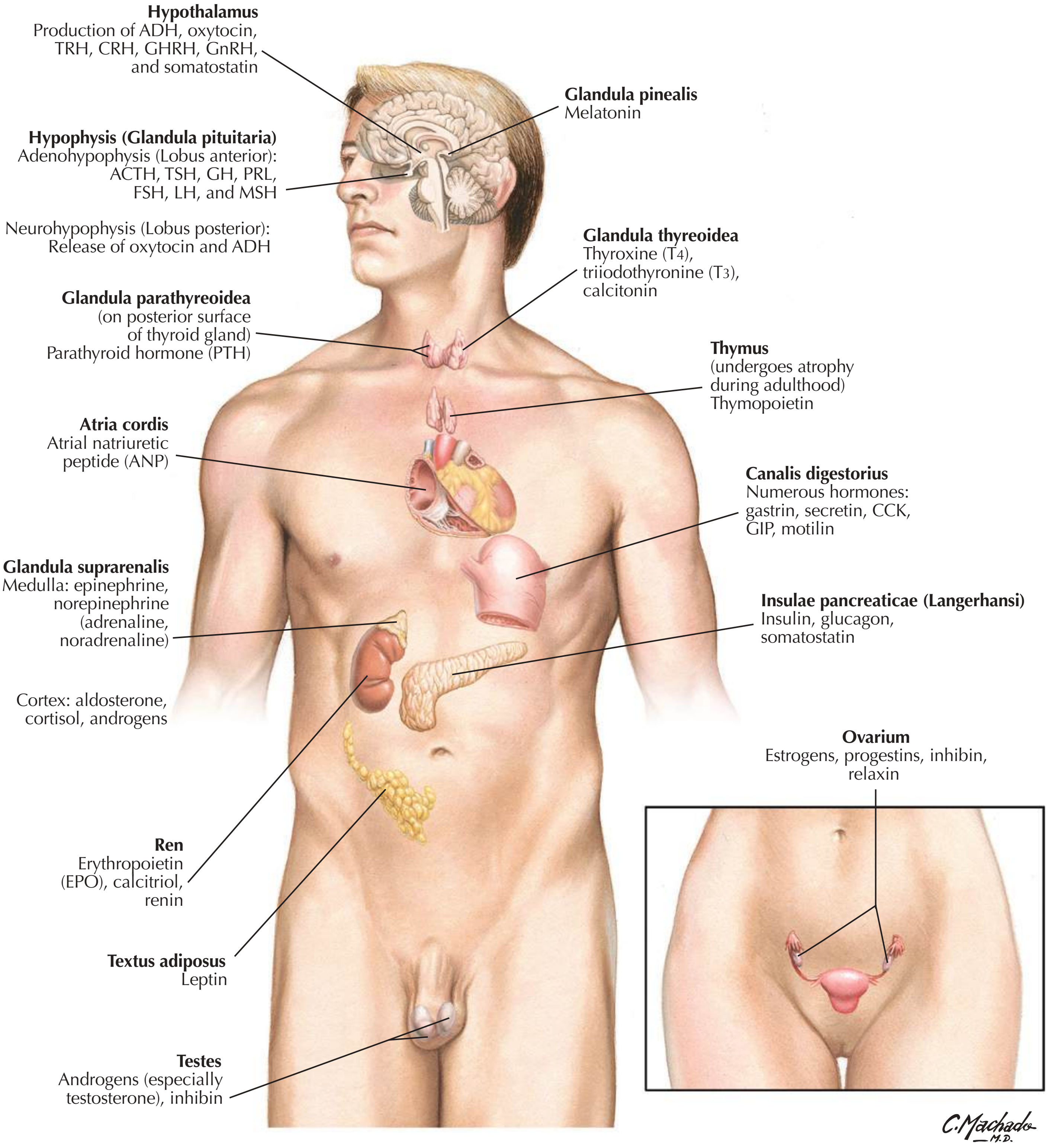
Glandulae salivariae (Glandulae sublingualis, submandibularis, and parotidea)
Secretion of lubricating fluid containing enzymes that initiate digestion

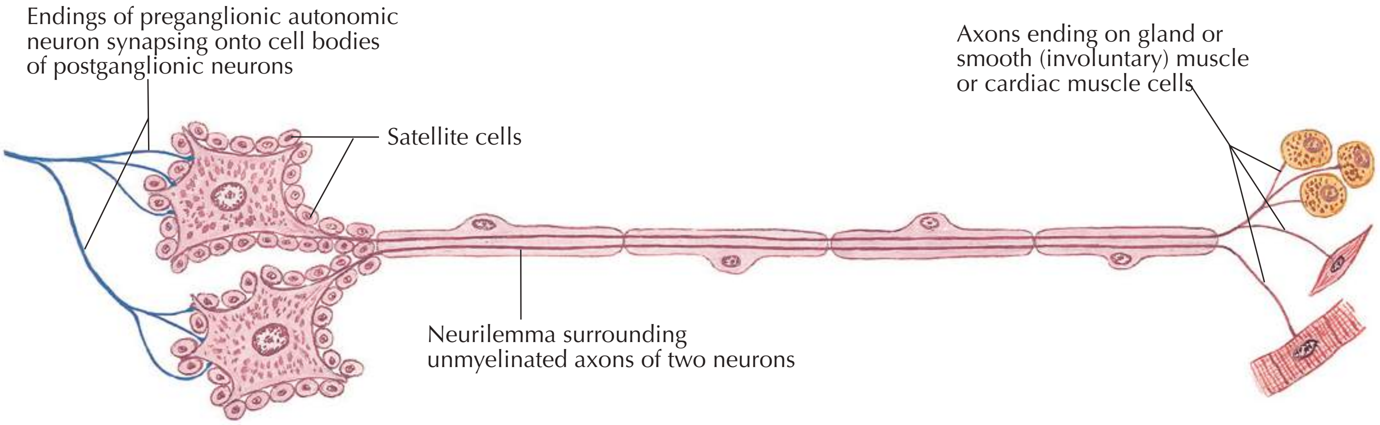
Oesophagus
Transport of food into the stomach

Gaster
Chemical breakdown of food by acid and enzymes; mechanical breakdown via muscular contractions; absorption of water, alcohol, and some minerals

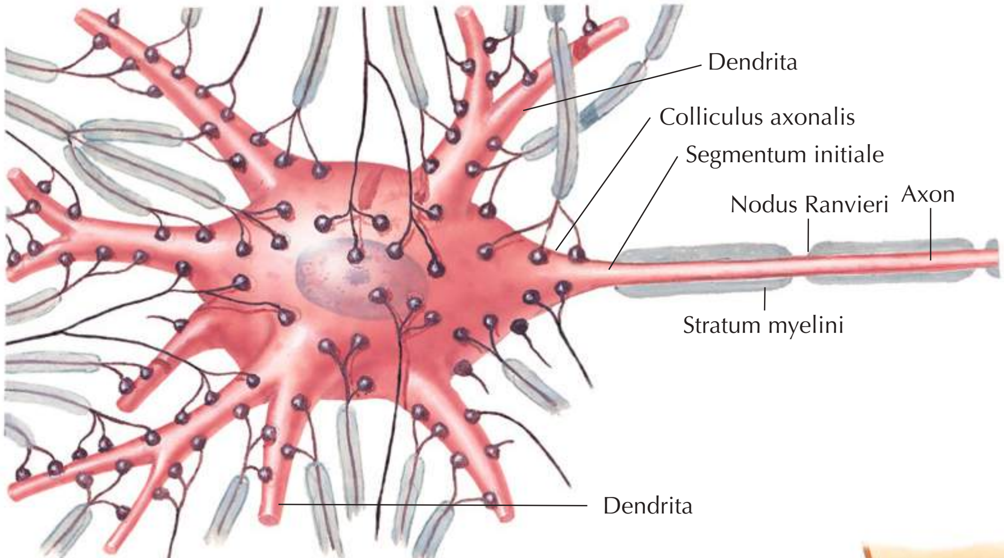
Intestinum tenue
Enzymatic digestion and absorption of water, organic substrates, vitamins, and ions; host defense

Overview of the Endocrine System


Hypothalamus
Production of ADH, oxytocin, TRH, CRH, GHRH, GnRH, and somatostatin
Glandula pinealis
Melatonin
Hypophysis (Glandula pituitaria)
Adenohypophysis (Lobus anterior): ACTH, TSH, GH, PRL, FSH, LH, and MSH
Neurohypophysis (Lobus posterior): Release of oxytocin and ADH
Glandula thyreoidea
Thyroxine (T4), triiodothyronine (T3), calcitonin
Glandula parathyreoidea
(on posterior surface of thyroid gland) Parathyroid hormone (PTH)
Thymus
(undergoes atrophy during adulthood) Thymopoietin
Atria cordis
Atrial natriuretic peptide (ANP)
Canalis digestorius
Numerous hormones: gastrin, secretin, CCK, GIP, motilin
Glandula suprarenalis
Medulla: epinephrine, norepinephrine (adrenaline, noradrenaline)
Cortex: aldosterone, cortisol, androgens
Insulae pancreaticae (Langerhansi)
Insulin, glucagon, somatostatin
Ovarium
Estrogens, progestins, inhibin, relaxin
Ren
Erythropoietin (EPO), calcitriol, renin
Textus adiposus
Leptin
Testes
Androgens (especially testosterone), inhibin

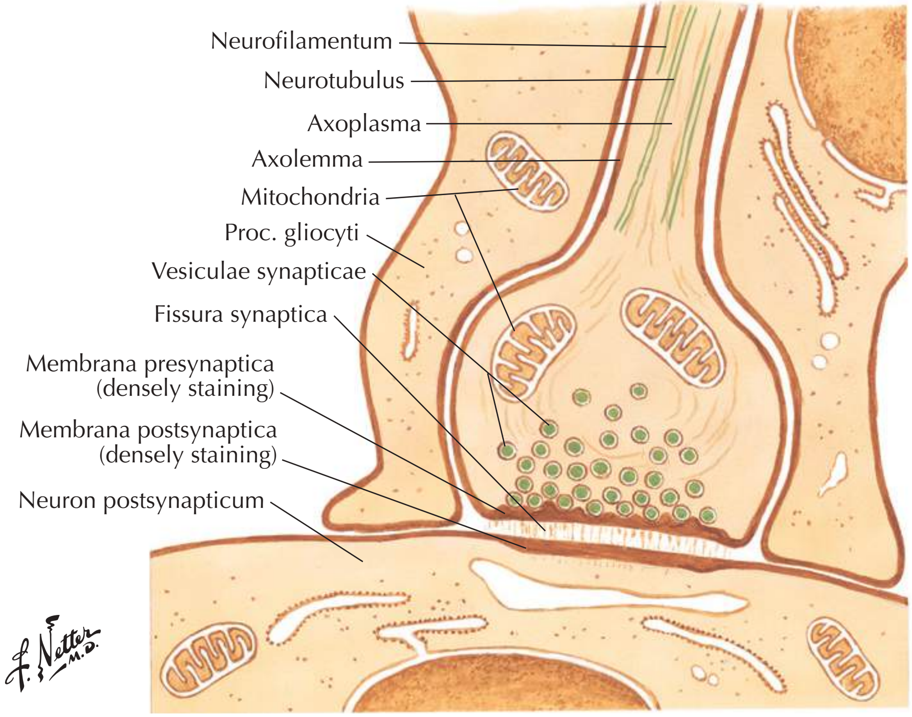

Endings of preganglionic autonomic neuron synapsing onto cell bodies of postganglionic neurons
Satellite cells
Axons ending on gland or smooth (involuntary) muscle or cardiac muscle cells
Neurilemma surrounding unmyelinated axons of two neurons

Two postganglionic autonomic neurons of a sympathetic or parasympathetic ganglion


Dendrita
Colliculus axonalis
Segmentum initiale
Nodus Ranvieri
Axon
Stratum myelini
Dendrita

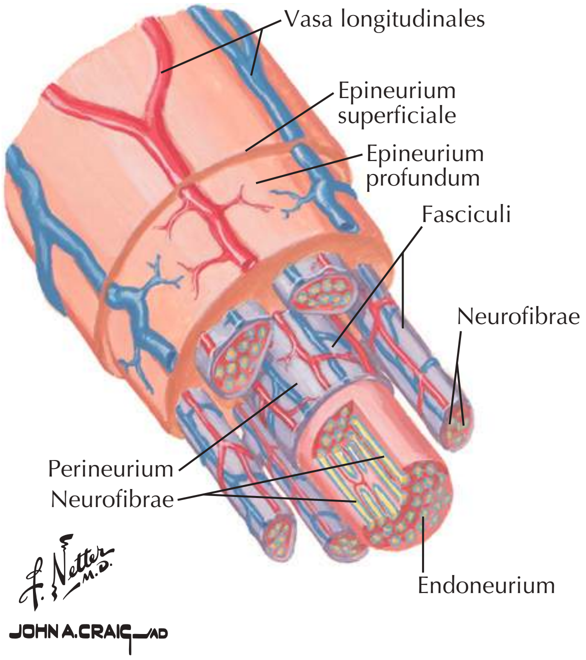
Schematic of synaptic endings

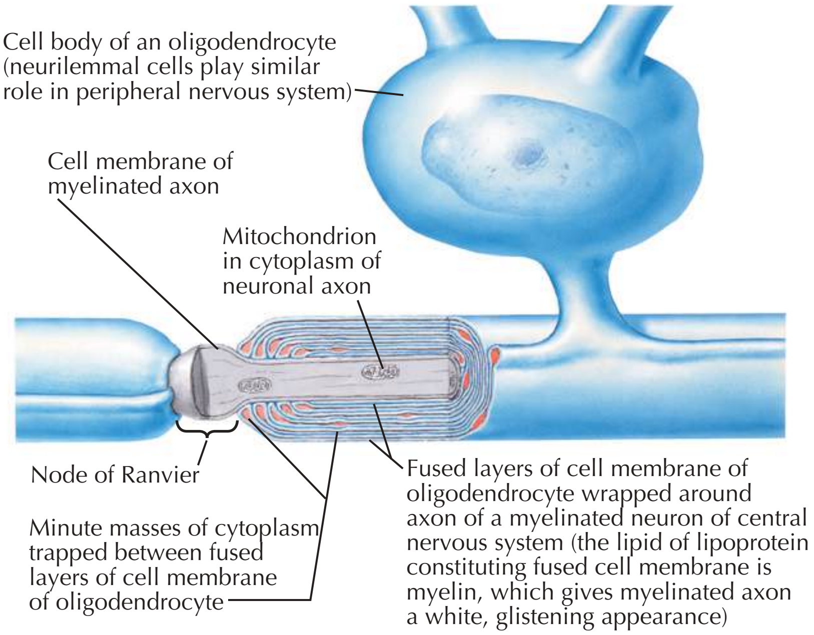
Numerous boutons (synaptic knobs) of presynaptic neurons terminating on a motor neuron and its dendrites

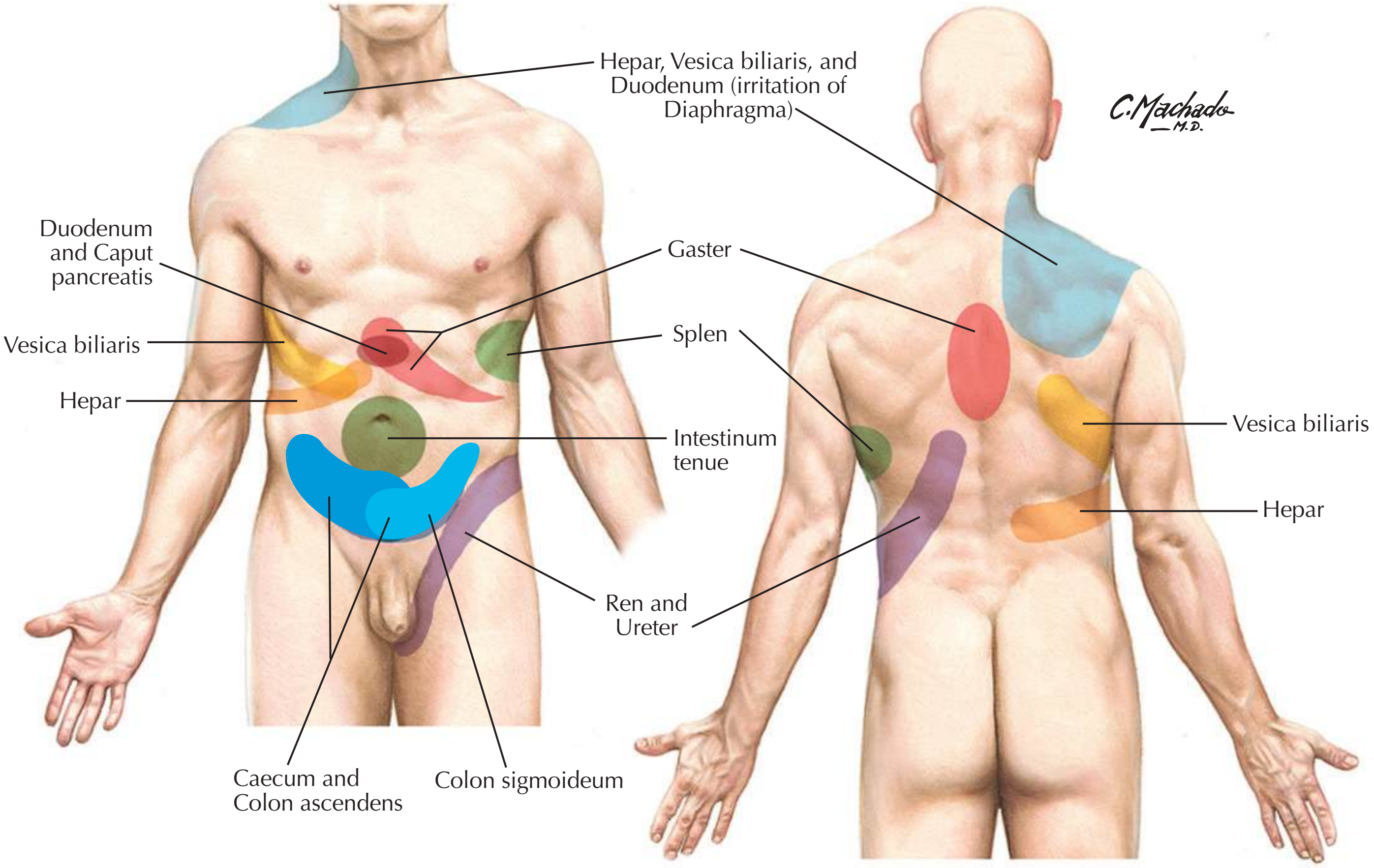

Neurofilamentum
Neurotubulus
Axoplasma
Axolemma
Mitochondria
Proc. gliocyti
Vesiculae synapticae
Fissura synaptica
Membrana presynaptica (densely staining)
Membrana postsynaptica (densely staining)
Neuron postsynapticum

Enlarged section of bouton

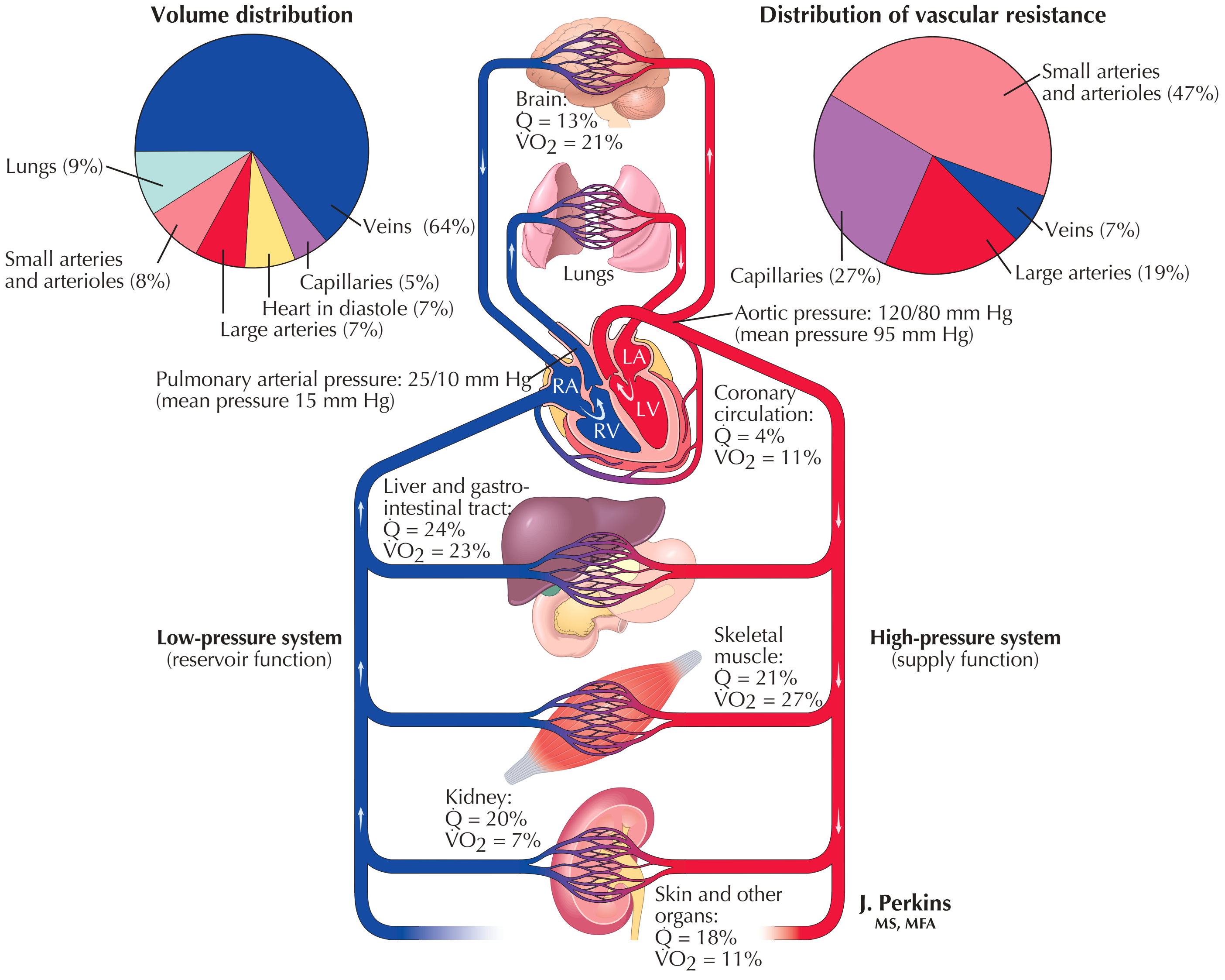
Features of a Typical Peripheral Nerve


Vasa longitudinales
Epineurium superficiale
Epineurium profundum
Fasciculi
Neurofibrae
Perineurium
Neurofibrae
Endoneurium
F. Netter M.D.
JOHN A.CRAIG—AD

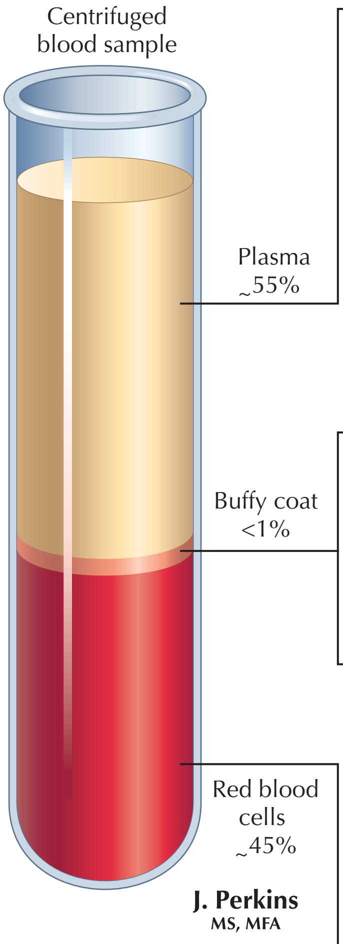

Cell body of an oligodendrocyte (neurilemmal cells play similar role in peripheral nervous system)
Cell membrane of myelinated axon
Mitochondrion in cytoplasm of neuronal axon
Node of Ranvier
Minute masses of cytoplasm trapped between fused layers of cell membrane of oligodendrocyte
Fused layers of cell membrane of oligodendrocyte wrapped around axon of a myelinated neuron of central nervous system (the lipid of lipoprotein constituting fused cell membrane is myelin, which gives myelinated axon a white, glistening appearance)


Hepar, Vesica biliaris, and Duodenum (irritation of Diaphragma)
C.Machado M.D.
Duodenum and Caput pancreatis
Gaster
Vesica biliaris
Splen
Hepar
Intestinum tenue
Vesica biliaris
Hepar
Ren and Ureter
Caecum and Colon ascendens
Colon sigmoideum

General Organization of the Cardiovascular System


Volume distribution
Lungs (9%)
Small arteries and arterioles (8%)
Large arteries (7%)
Heart in diastole (7%)
Capillaries (5%)
Veins (64%)
Distribution of vascular resistance
Small arteries and arterioles (47%)
Veins (7%)
Large arteries (19%)
Capillaries (27%)
Brain:
$\dot{Q}$ = 13%
$\dot{V}O_2$ = 21%
Lungs
Aortic pressure: 120/80 mm Hg
(mean pressure 95 mm Hg)
Pulmonary arterial pressure: 25/10 mm Hg
(mean pressure 15 mm Hg)
RA
LA
LV
RV
Coronary circulation:
$\dot{Q}$ = 4%
$\dot{V}O_2$ = 11%
Liver and gastro-intestinal tract:
$\dot{Q}$ = 24%
$\dot{V}O_2$ = 23%
Low-pressure system
(reservoir function)
High-pressure system
(supply function)
Skeletal muscle:
$\dot{Q}$ = 21%
$\dot{V}O_2$ = 27%
Kidney:
$\dot{Q}$ = 20%
$\dot{V}O_2$ = 7%
Skin and other organs:
$\dot{Q}$ = 18%
$\dot{V}O_2$ = 11%
J. Perkins
MS, MFA

$\dot{Q}$ = blood flow per minute
$\dot{V}O_2$= oxygen used per minute


Centrifuged blood sample
Plasma ~55%
Buffy coat <1%
Red blood cells ~45%
J. Perkins MS, MFA

Plasma composition

Water 92%
Transports organic and inorganic molecules, cells, platelets, and heat

Plasma proteins 7%

Other solutes 1%

Plasma proteins

Albumins 60%
Transport lipids, steroid hormones; major contributors to osmotic concentration of plasma

Globulins 35%
Transport ions, hormones, lipids; immune function

Fibrinogen 4%
Essential component of clotting system

Regulatory proteins <1%
Enzymes, hormones, clotting proteins

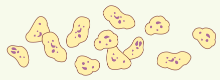
Other solutes

Electrolytes
Normal extracellular fluid ion composition essential for vital cellular activities (e.g., Na+, K+, Cl)

Organic nutrients
Used for ATP production, growth, and maintenance of cells (e.g., fatty acids, glucose, amino acids)

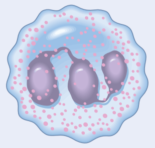
Organic wastes
Carried to sites of breakdown or excretion (e.g., urea, bilirubin)

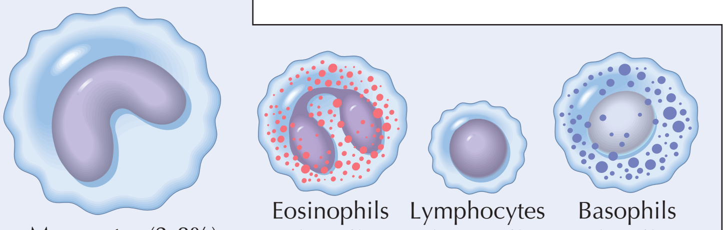
Platelets



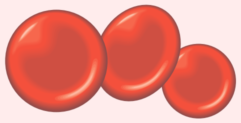
Blood clot formation and tissue repair

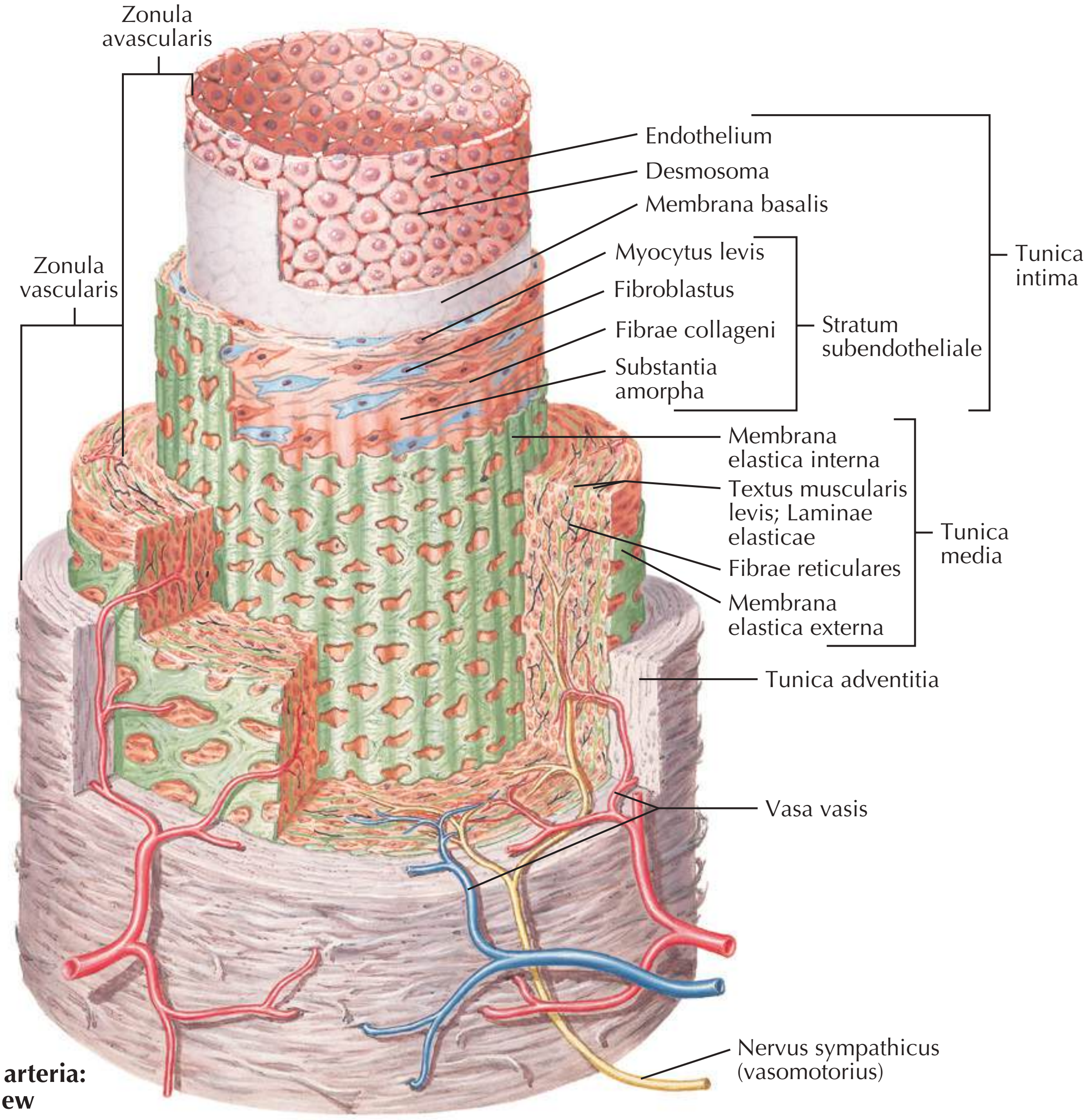
White blood cells


Neutrophils (50-70%)

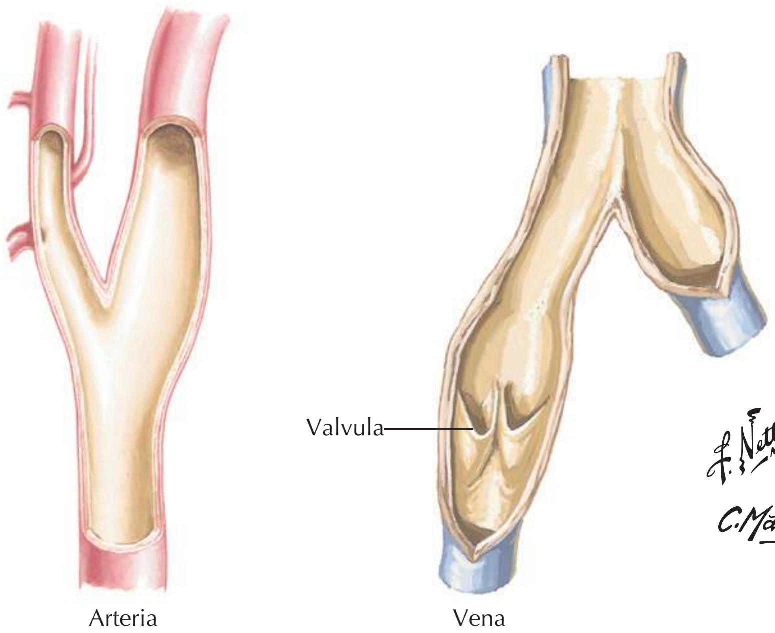

Monocytes (2-8%)
Eosinophils (2-4%)
Lymphocytes (20-30%)
Basophils (<1%)

Red blood cells




Zonula avascularis
Zonula vascularis
Endothelium
Desmosoma
Membrana basalis
Myocytus levis
Fibroblastus
Fibrae collageni
Substantia amorpha
Stratum subendotheliale
Tunica intima
Membrana elastica interna
Textus muscularis levis; Laminae elasticae
Fibrae reticulares
Membrana elastica externa
Tunica media
Tunica adventitia
Vasa vasis
Nervus sympathicus (vasomotorius)

Wall of an arteria: cutaway view


Valvula
Arteria
Vena

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HEAD AND NECK

2

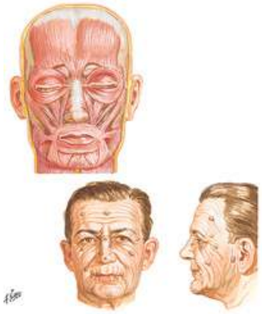
Surface Anatomy 8
Superficial Head and Neck 9-10
Bones and Ligaments 11-30
Neck 31-41
Nasal Region 42-64
Oral Region 65-74
Pharynx 75-86
Thyroid Gland and Larynx 87-93
Orbit and Contents 94-104
Ear 105-110
Meninges and Brain 111-126
Cranial and Cervical Nerves 127-146
Cerebral Vasculature 147-158
Regional Imaging 159-160
Structures with High Clinical Significance Tables 2.1-2.3
Muscle Tables Tables 2.4-2.9
Electronic Bonus Plates BP17-BP32

ELECTRONIC BONUS PLATES

BP17 3D Skull Reconstruction CTs

BP18 Degenerative Changes in Cervical Vertebrae

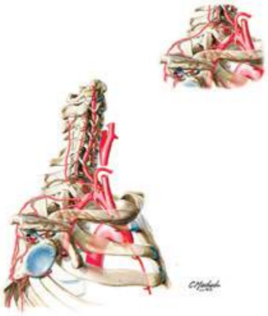
BP19 Atlantooccipital Junction



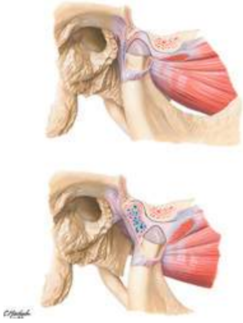
BP20 Muscles of Facial Expression: Anterior View

BP21 Musculature of Face

BP22 Paranasal Sinuses

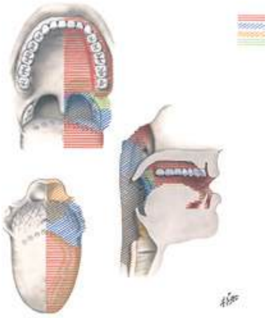


BP23 Subclavian Artery



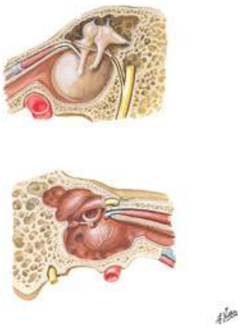
BP24 Opening of the Mandible

ELECTRONIC BONUS PLATES—*cont'd*



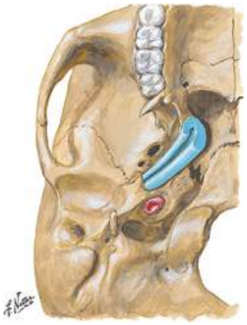
BP25 Afferent Innervation of Oral Cavity and Pharynx

BP26 Fasciae of Orbit and Eyeball

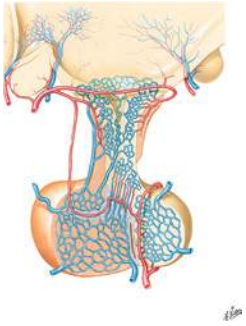


BP27 Tympanic Cavity

BP28 Anatomy of the Pediatric Ear

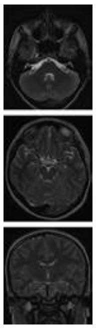


BP29 Auditory Tube (Eustachian)



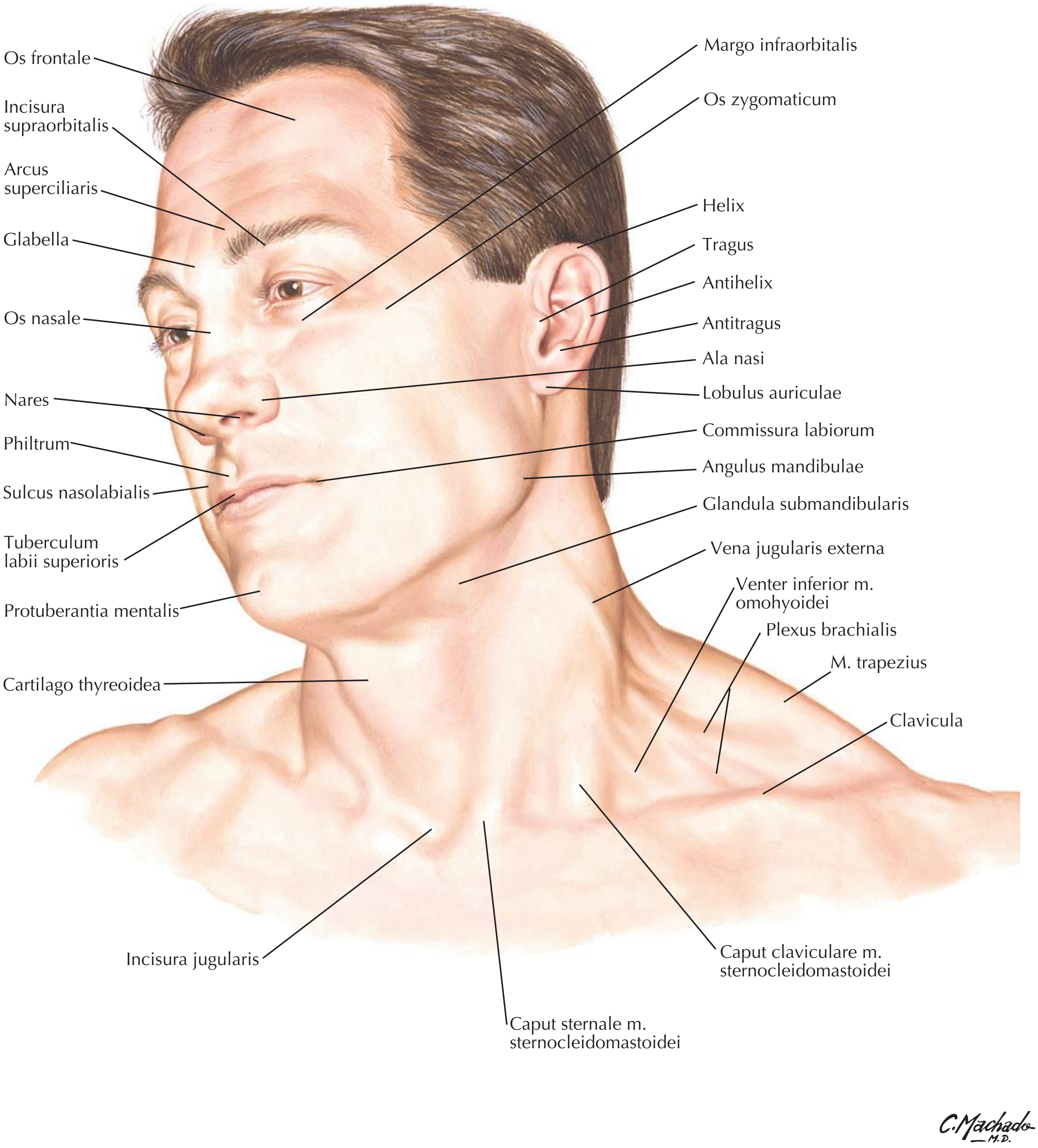
BP30 Arteries and Veins of Hypothalamus and Hypophysis

BP31 Cranial Imaging (MRV and MRA)



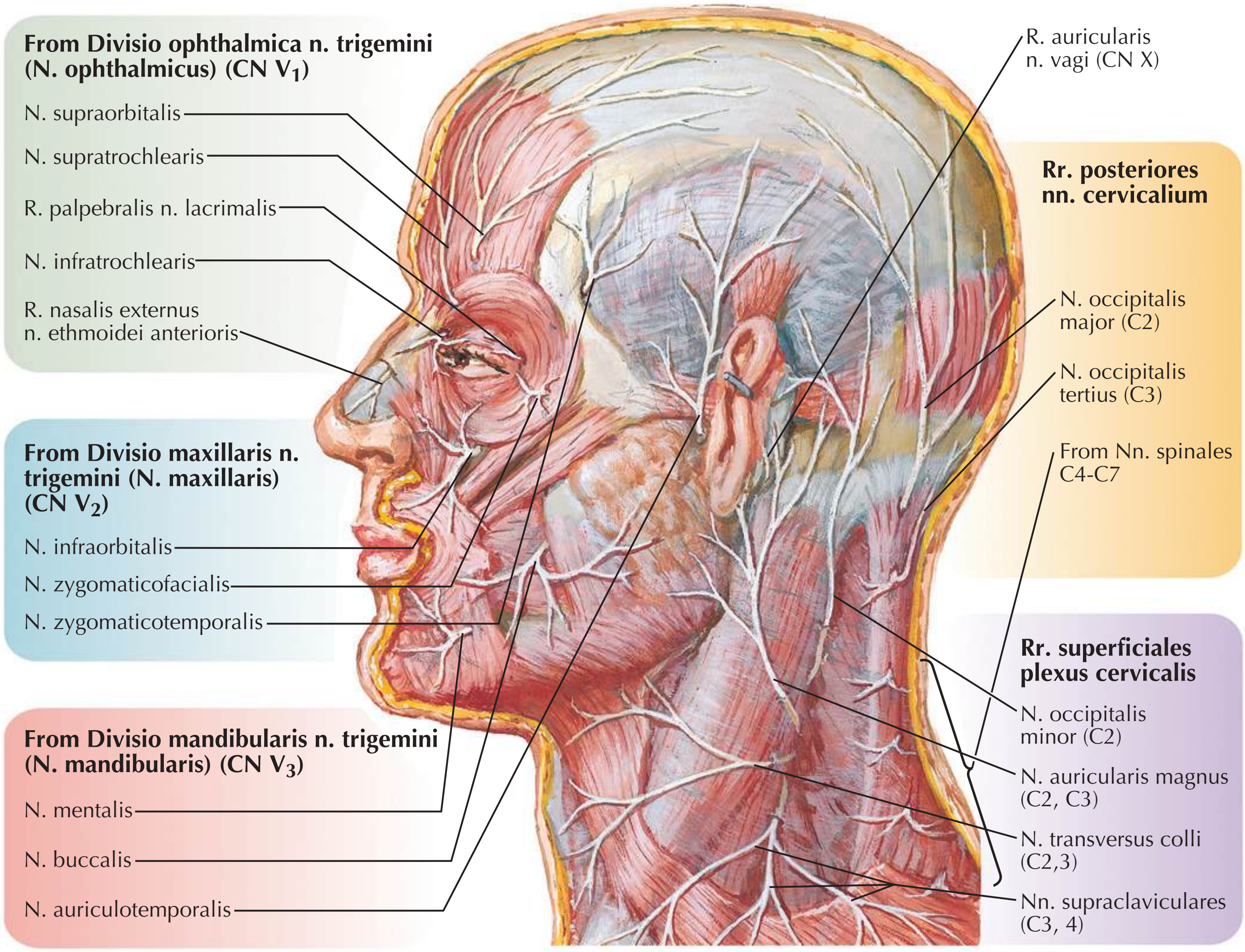
BP32 Axial and Coronal MRIs of Brain

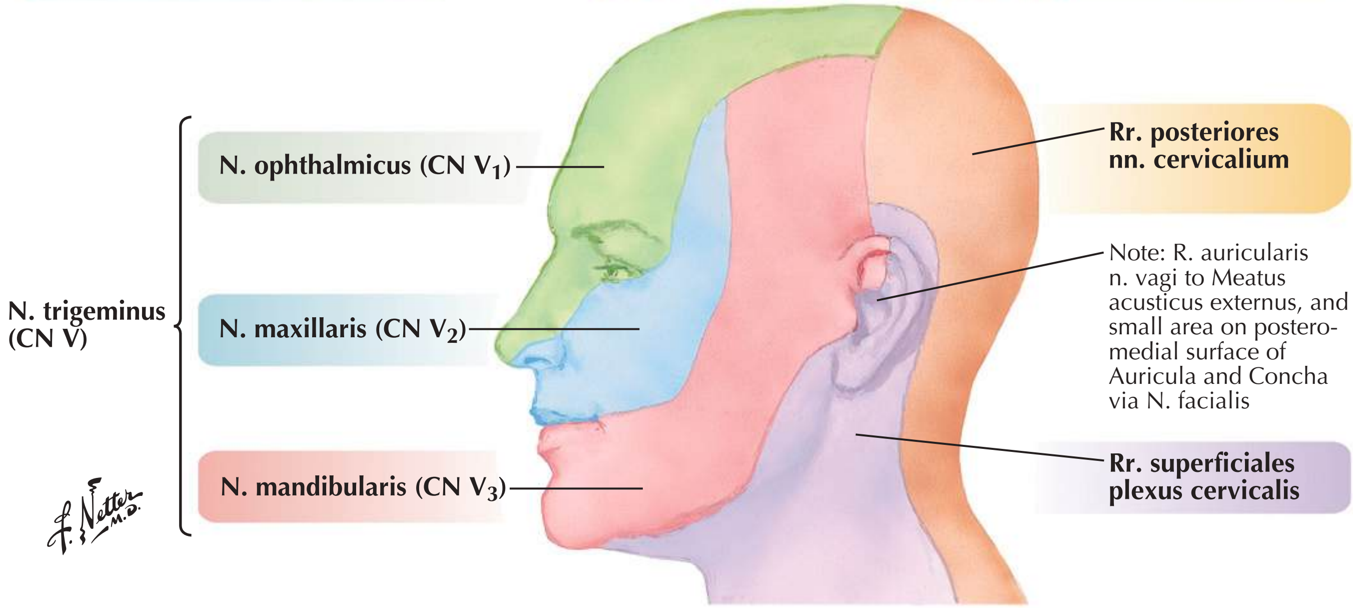
See also Plate 171


Os frontale
Incisura supraorbitalis
Arcus superciliaris
Glabella
Os nasale
Nares
Philtrum
Sulcus nasolabialis
Tuberculum labii superioris
Protuberantia mentalis
Cartilago thyreoidea
Incisura jugularis
Caput sternale m. sternocleidomastoidei
Caput claviculare m. sternocleidomastoidei
Margo infraorbitalis
Os zygomaticum
Helix
Tragus
Antihelix
Antitragus
Ala nasi
Lobulus auriculae
Commissura labiorum
Angulus mandibulae
Glandula submandibularis
Vena jugularis externa
Venter inferior m. omohyoidei
Plexus brachialis
M. trapezius
Clavicula
C. Machado M.D.

Cutaneous Nerves of Head and Neck

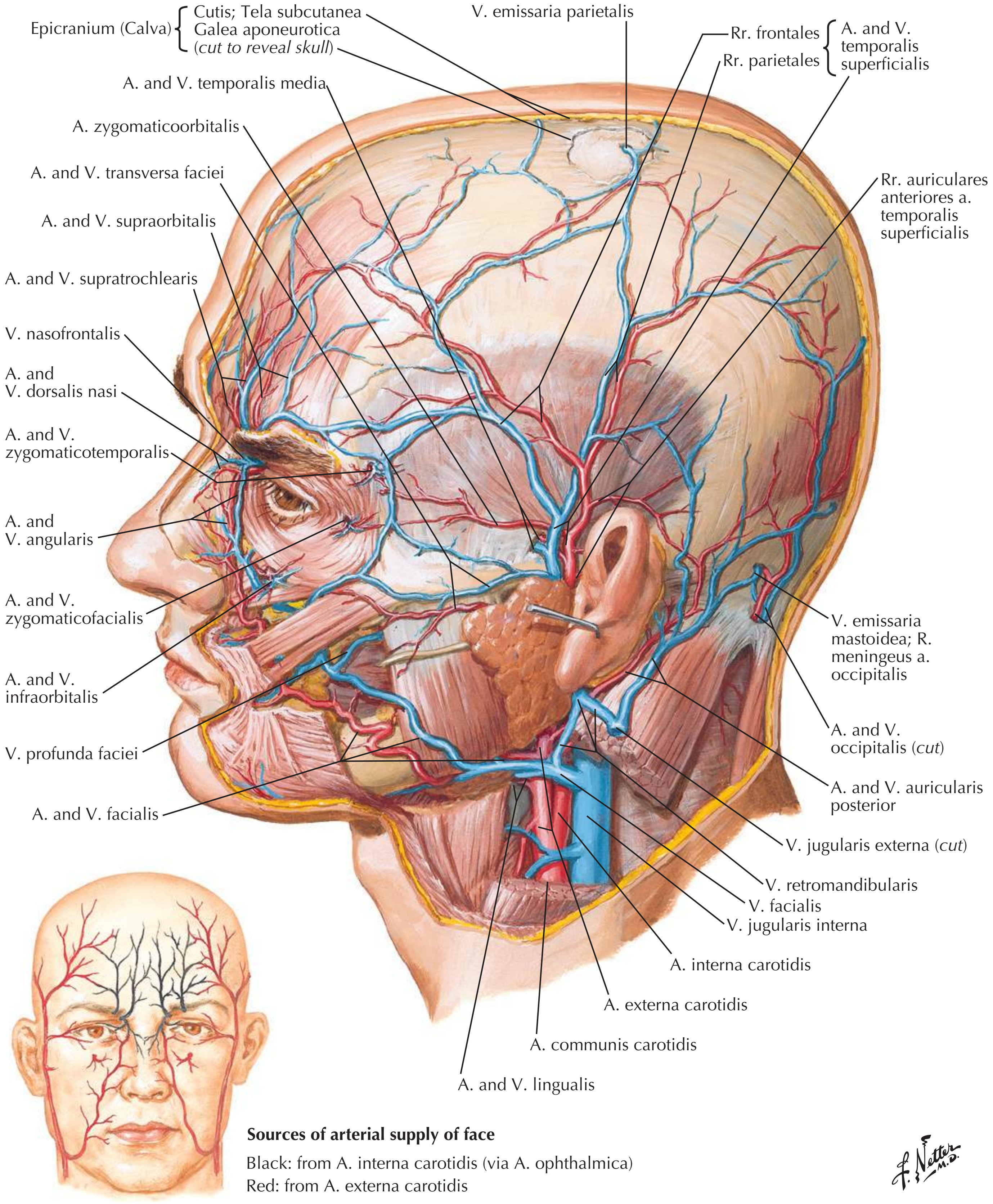
See also Plates 39, 42, 61


From Divisio ophthalmica n. trigemini (N. ophthalmicus) (CN V1)
N. supraorbitalis
N. supratrochlearis
R. palpebralis n. lacrimalis
N. infratrochlearis
R. nasalis externus n. ethmoidei anterioris
From Divisio maxillaris n. trigemini (N. maxillaris) (CN V2)
N. infraorbitalis
N. zygomaticofacialis
N. zygomaticotemporalis
From Divisio mandibularis n. trigemini (N. mandibularis) (CN V3)
N. mentalis
N. buccalis
N. auriculotemporalis
R. auricularis n. vagi (CN X)
Rr. posteriores nn. cervicalium
N. occipitalis major (C2)
N. occipitalis tertius (C3)
From Nn. spinales C4-C7
Rr. superficiales plexus cervicalis
N. occipitalis minor (C2)
N. auricularis magnus (C2, C3)
N. transversus colli (C2,3)
Nn. supraclaviculares (C3, 4)


N. trigeminus (CN V)
N. ophthalmicus (CN V1)
N. maxillaris (CN V2)
N. mandibularis (CN V3)
Rr. posteriores nn. cervicalium
Note: R. auricularis n. vagi to Meatus acusticus externus, and small area on postero-medial surface of Auricula and Concha via N. facialis
Rr. superficiales plexus cervicalis

Superficial Arteries and Veins of Face and Scalp

See also Plates 57, 83, 84

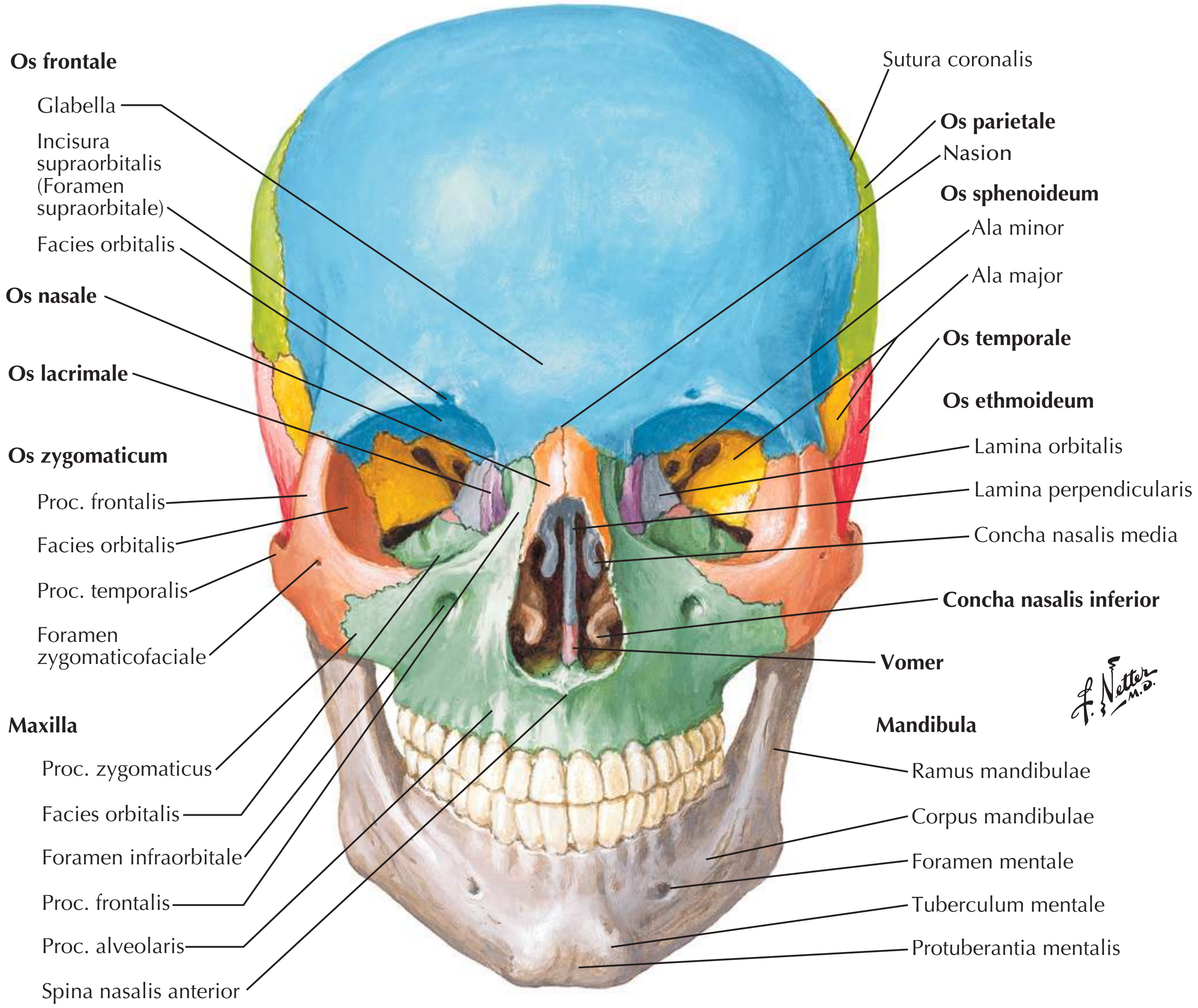

Epicranium (Calva)
Cutis; Tela subcutanea
Galea aponeurotica
(*cut to reveal skull*)
V. emissaria parietalis
Rr. frontales
Rr. parietales
A. and V. temporalis superficialis
A. and V. temporalis media
A. zygomaticoorbitalis
A. and V. transversa faciei
A. and V. supraorbitalis
A. and V. supratrochlearis
V. nasofrontalis
A. and V. dorsalis nasi
A. and V. zygomaticotemporalis
A. and V. angularis
A. and V. zygomaticofacialis
A. and V. infraorbitalis
V. profunda faciei
A. and V. facialis
Rr. auriculares anteriores a. temporalis superficialis
V. emissaria mastoidea; R. meningeus a. occipitalis
A. and V. occipitalis (*cut*)
A. and V. auricularis posterior
V. jugularis externa (*cut*)
V. retromandibularis
V. facialis
V. jugularis interna
A. interna carotidis
A. externa carotidis
A. communis carotidis
A. and V. lingualis

Sources of arterial supply of face

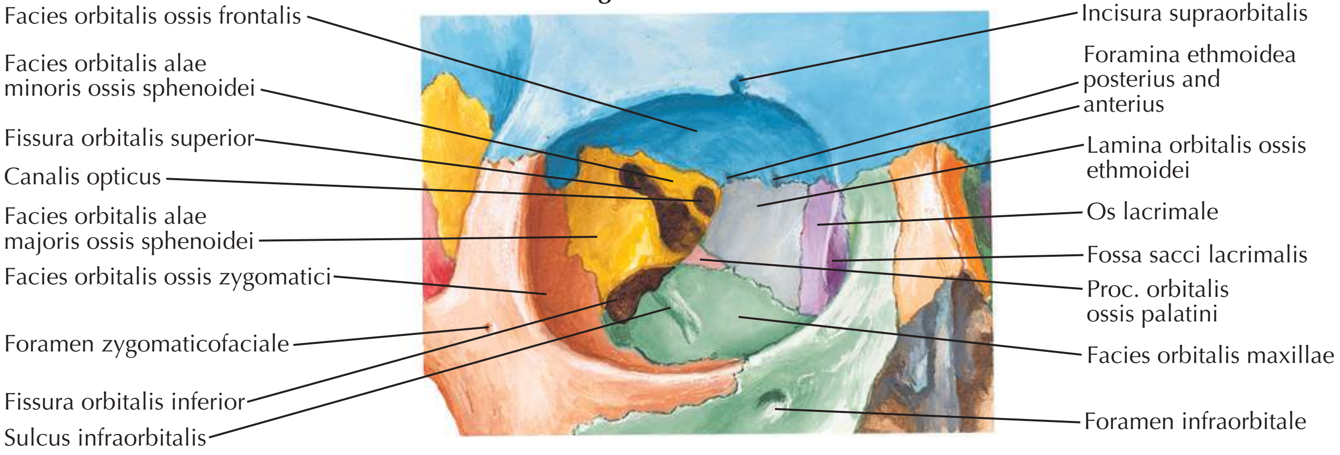
Black: from A. interna carotidis (via A. ophthalmica)
Red: from A. externa carotidis

Skull: Anterior View

See also Plate 13

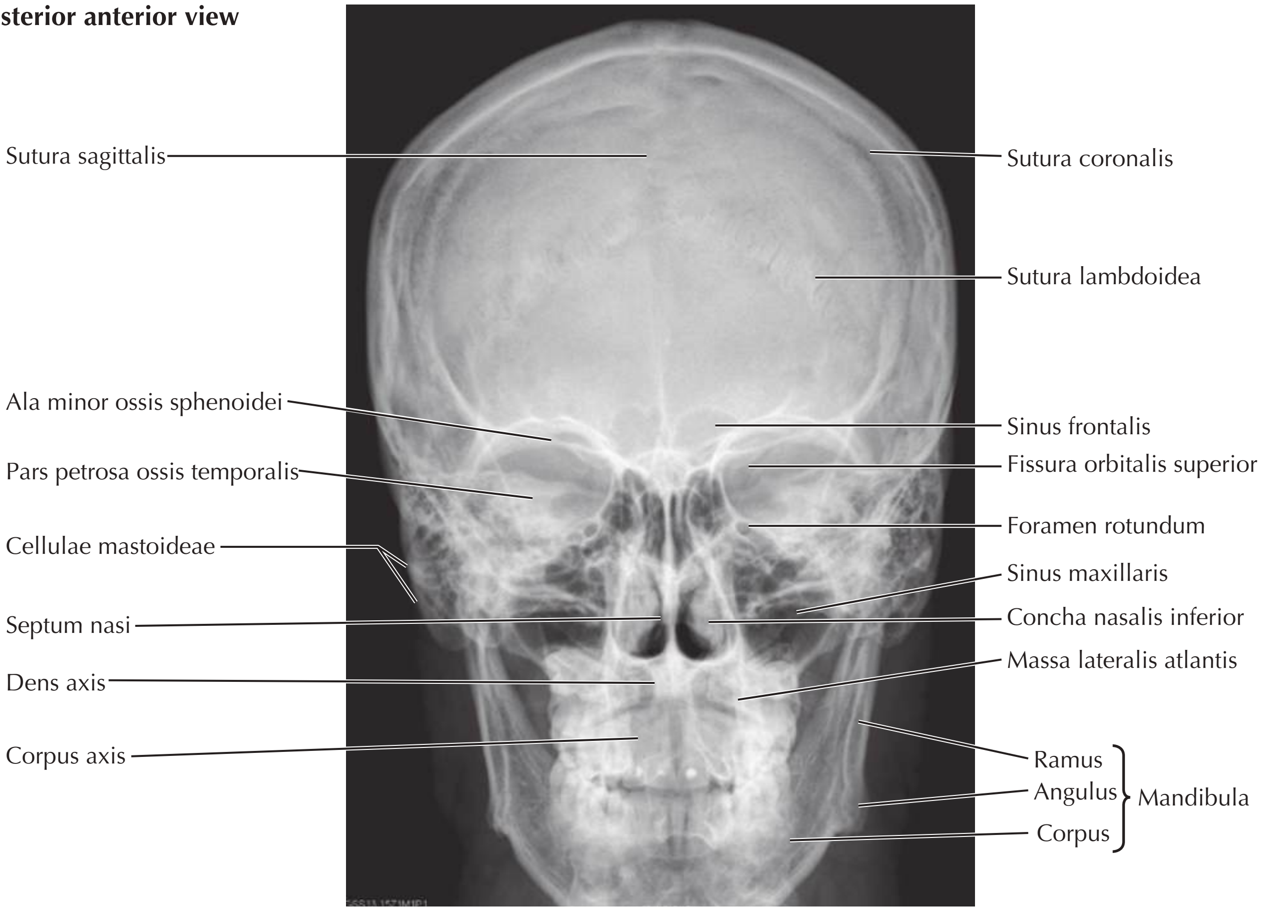

Os frontale
Glabella
Incisura supraorbitalis (Foramen supraorbitale)
Facies orbitalis
Os nasale
Os lacrimale
Os zygomaticum
Proc. frontalis
Facies orbitalis
Proc. temporalis
Foramen zygomaticofaciale
Maxilla
Proc. zygomaticus
Facies orbitalis
Foramen infraorbitale
Proc. frontalis
Proc. alveolaris
Spina nasalis anterior
Sutura coronalis
Os parietale
Nasion
Os sphenoideum
Ala minor
Ala major
Os temporale
Os ethmoideum
Lamina orbitalis
Lamina perpendicularis
Concha nasalis media
Concha nasalis inferior
Vomer
Mandibula
Ramus mandibulae
Corpus mandibulae
Foramen mentale
Tuberculum mentale
Protuberantia mentalis

Right orbit: frontal view

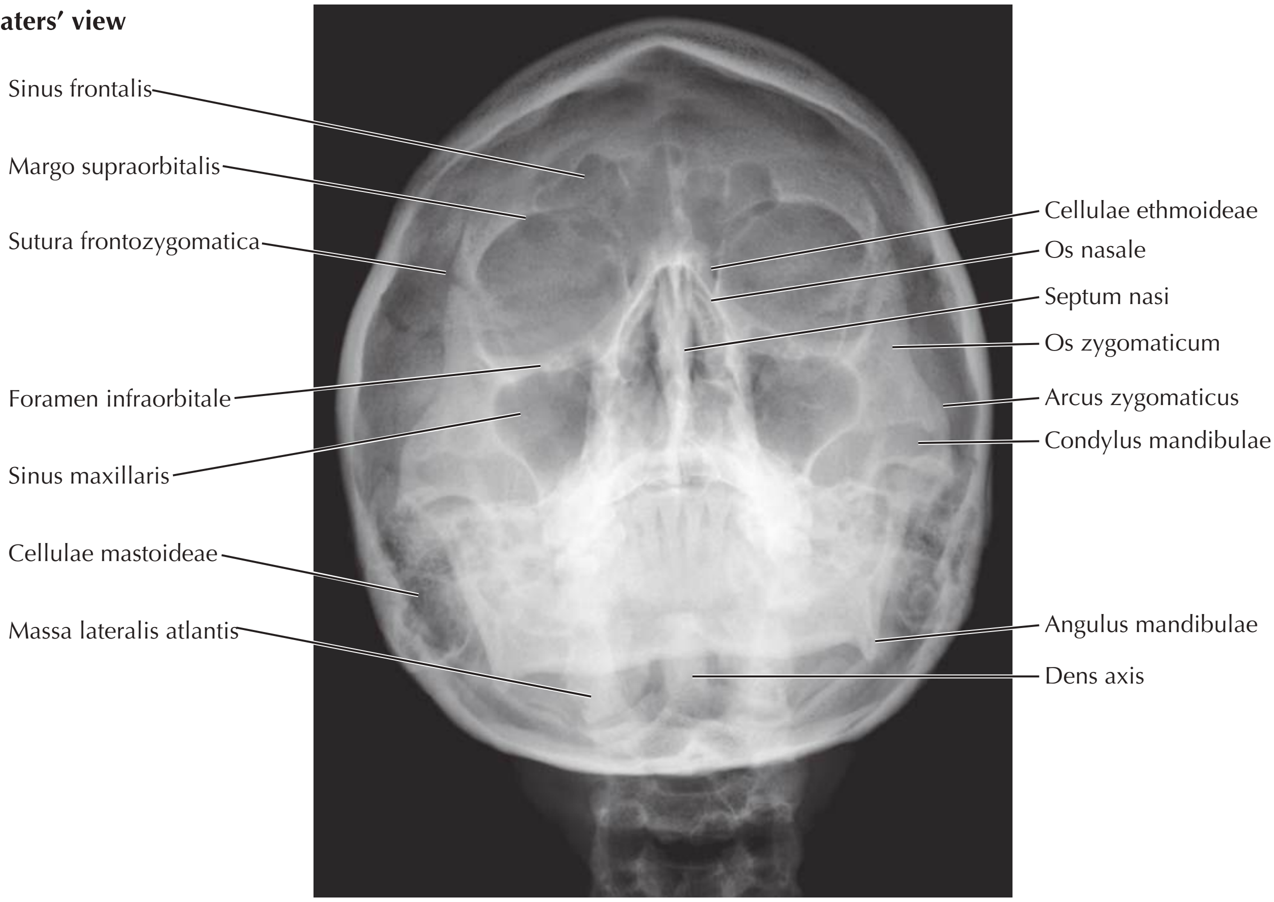

Facies orbitalis ossis frontalis
Facies orbitalis alae minoris ossis sphenoidei
Fissura orbitalis superior
Canalis opticus
Facies orbitalis alae majoris ossis sphenoidei
Facies orbitalis ossis zygomatici
Foramen zygomaticofaciale
Fissura orbitalis inferior
Sulcus infraorbitalis
Incisura supraorbitalis
Foramina ethmoidea posterius and anterius
Lamina orbitalis ossis ethmoidei
Os lacrimale
Fossa sacci lacrimalis
Proc. orbitalis ossis palatini
Facies orbitalis maxillae
Foramen infraorbitale

See also Plate 11

Posterior anterior view

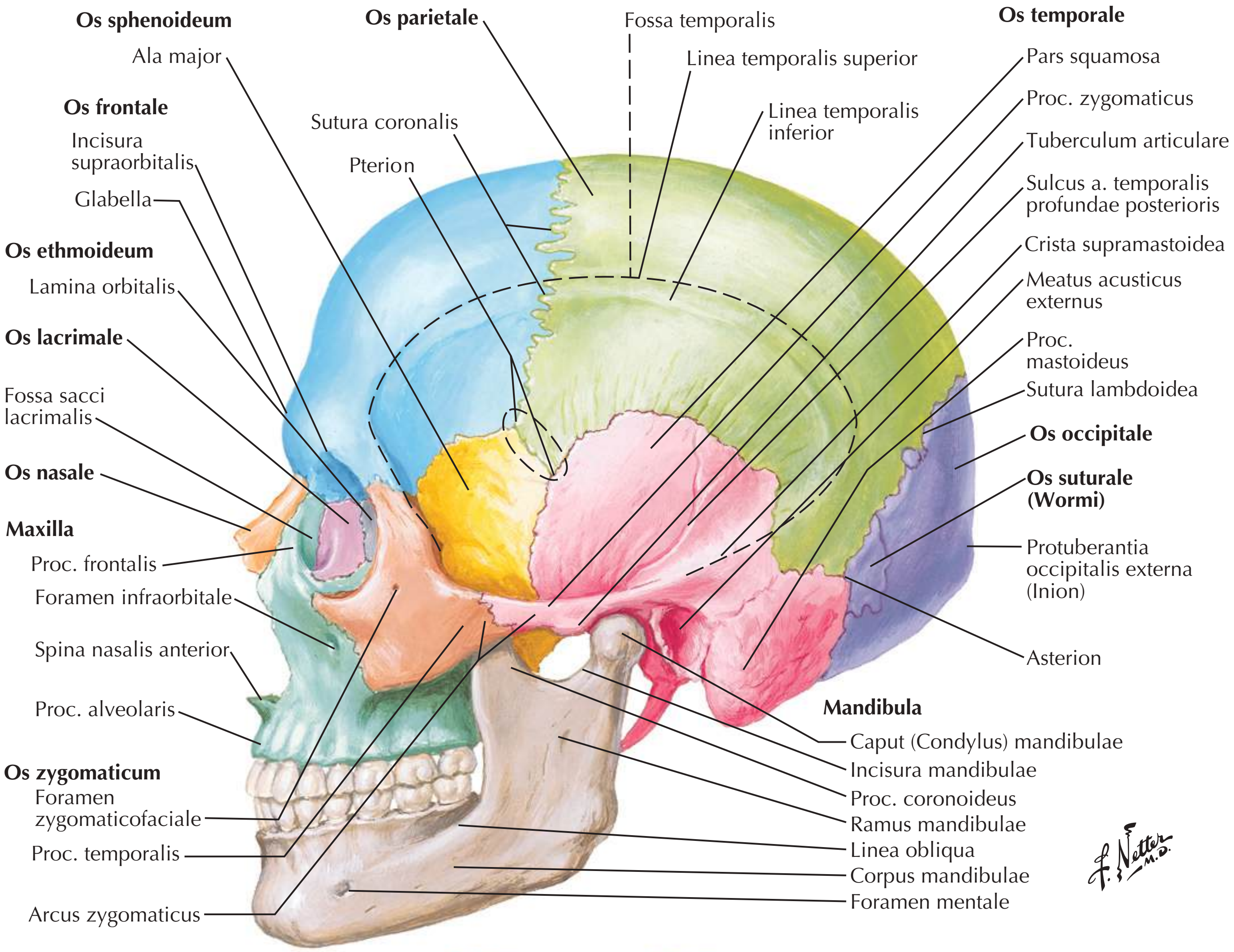

Sutura sagittalis
Sutura coronalis
Sutura lambdoidea
Ala minor ossis sphenoidei
Pars petrosa ossis temporalis
Cellulae mastoideae
Septum nasi
Dens axis
Corpus axis
Sinus frontalis
Fissura orbitalis superior
Foramen rotundum
Sinus maxillaris
Concha nasalis inferior
Massa lateralis atlantis
Ramus
Angulus
Corpus
Mandibula

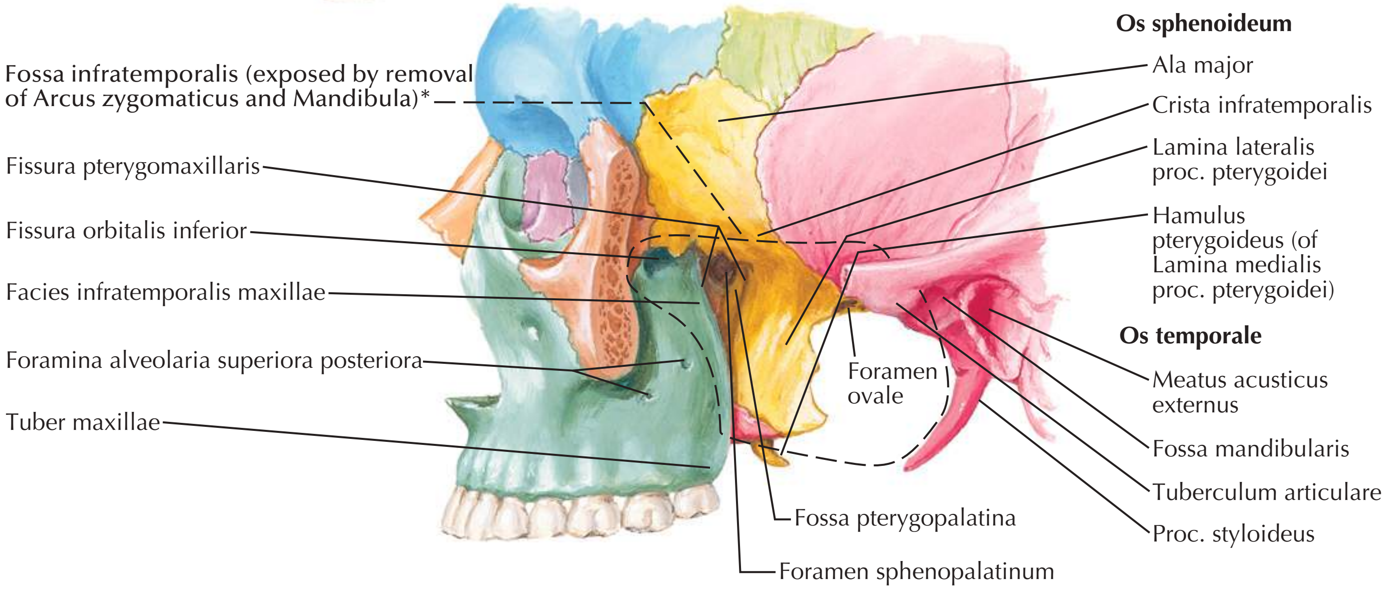
Waters' view


Sinus frontalis
Margo supraorbitalis
Sutura frontozygomatica
Foramen infraorbitale
Sinus maxillaris
Cellulae mastoideae
Massa lateralis atlantis
Cellulae ethmoideae
Os nasale
Septum nasi
Os zygomaticum
Arcus zygomaticus
Condylus mandibulae
Angulus mandibulae
Dens axis

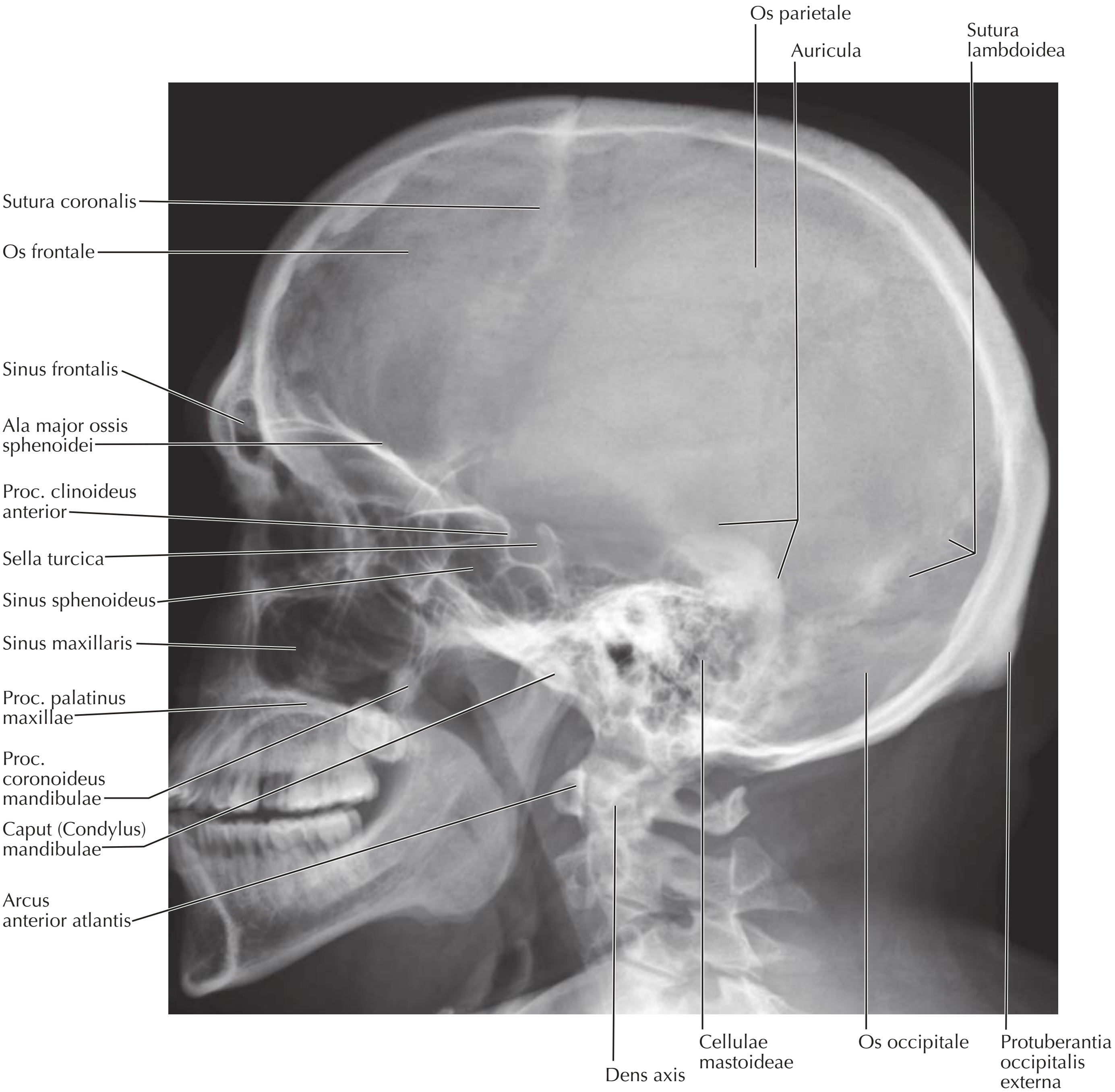
Skull: Lateral View

See also Plates 14, 15, 22


Os sphenoideum
Ala major
Os frontale
Incisura supraorbitalis
Glabella
Os ethmoideum
Lamina orbitalis
Os lacrimale
Fossa sacci lacrimalis
Os nasale
Maxilla
Proc. frontalis
Foramen infraorbitale
Spina nasalis anterior
Proc. alveolaris
Os zygomaticum
Foramen zygomaticofaciale
Proc. temporalis
Arcus zygomaticus
Os parietale
Sutura coronalis
Pterion
Fossa temporalis
Linea temporalis superior
Linea temporalis inferior
Os temporale
Pars squamosa
Proc. zygomaticus
Tuberculum articulare
Sulcus a. temporalis profundae posterioris
Crista supramastoidea
Meatus acusticus externus
Proc. mastoideus
Sutura lambdoidea
Os occipitale
Os suturale (Wormi)
Protuberantia occipitalis externa (Inion)
Asterion
Mandibula
Caput (Condylus) mandibulae
Incisura mandibulae
Proc. coronoideus
Ramus mandibulae
Linea obliqua
Corpus mandibulae
Foramen mentale
F. Netter M.D.

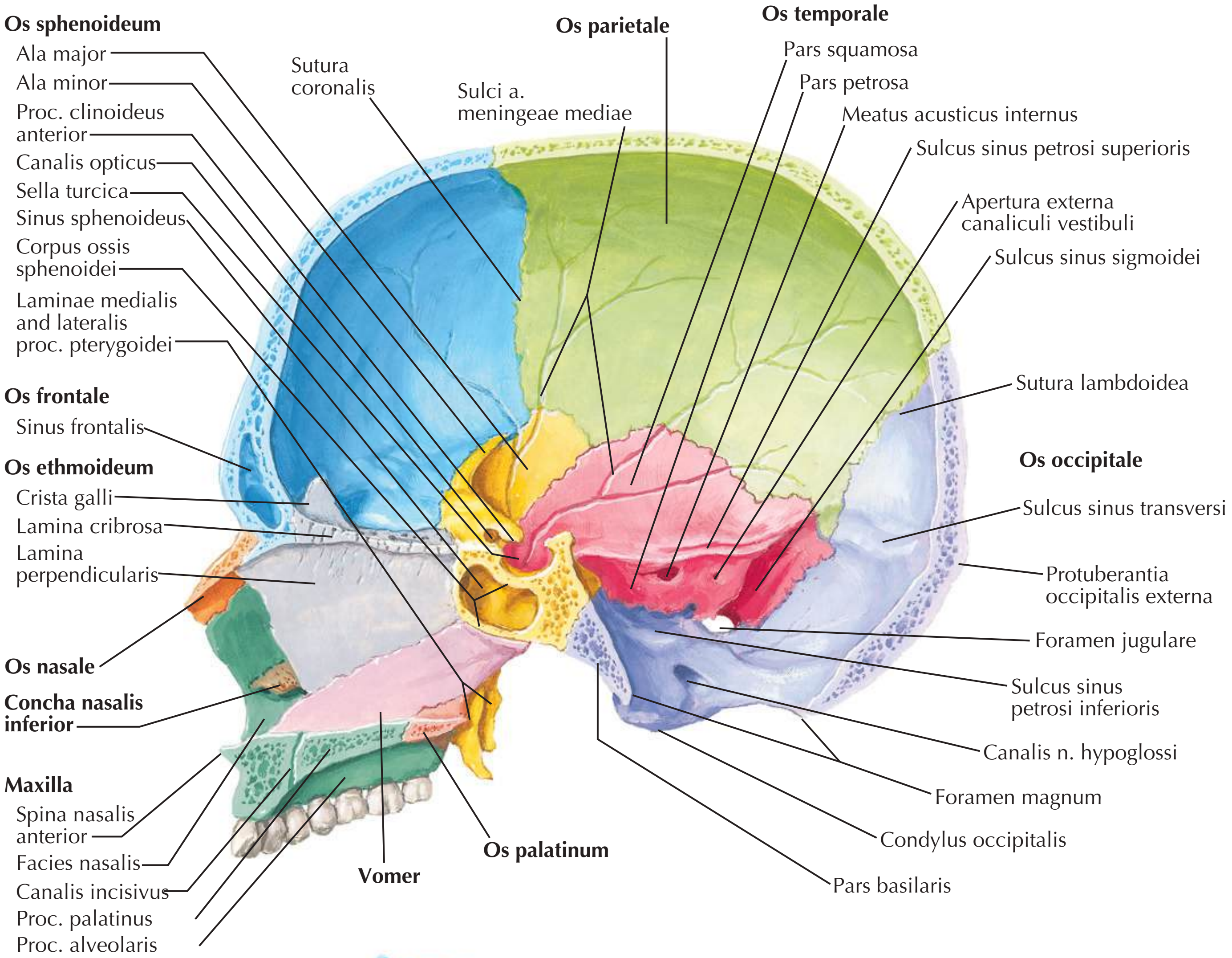

Fossa infratemporalis (exposed by removal of Arcus zygomaticus and Mandibula)*
Fissura pterygomaxillaris
Fissura orbitalis inferior
Facies infratemporalis maxillae
Foramina alveolaria superiora posteriora
Tuber maxillae
Os sphenoideum
Ala major
Crista infratemporalis
Lamina lateralis proc. pterygoidei
Hamulus pterygoideus (of Lamina medialis proc. pterygoidei)
Os temporale
Meatus acusticus externus
Fossa mandibularis
Tuberculum articulare
Proc. styloideus
Foramen ovale
Fossa pterygopalatina
Foramen sphenopalatinum

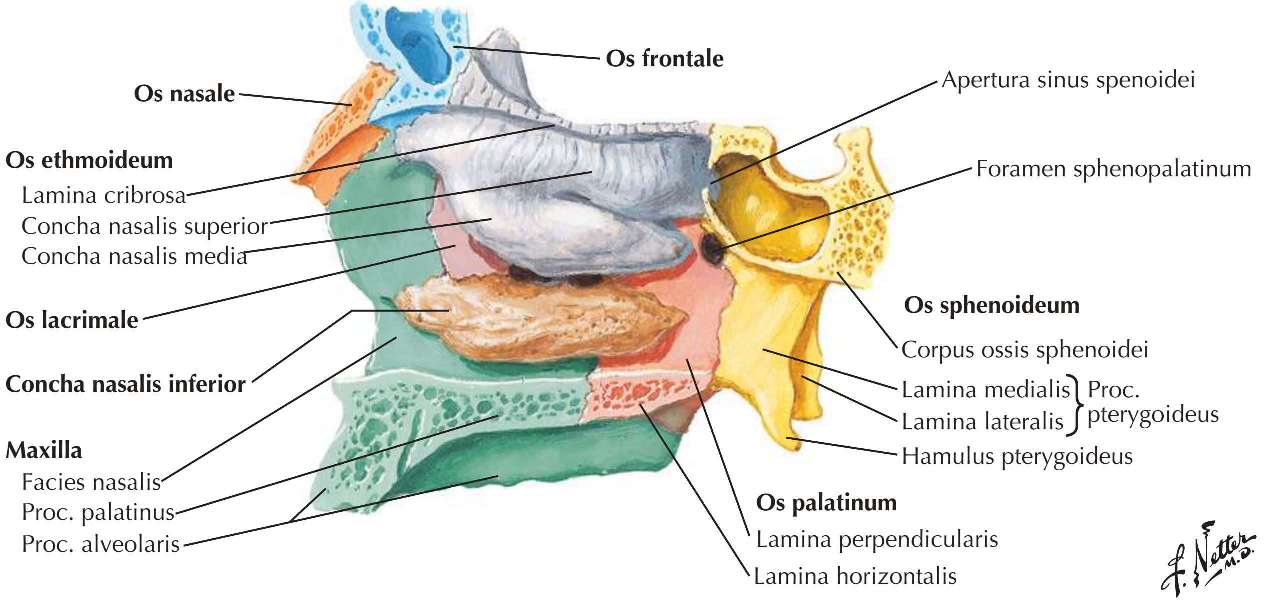
**Superficially, Processus mastoideus forms posterior boundary.*


Os parietale
Auricula
Sutura lambdoidea
Sutura coronalis
Os frontale
Sinus frontalis
Ala major ossis sphenoidei
Proc. clinoideus anterior
Sella turcica
Sinus sphenoideus
Sinus maxillaris
Proc. palatinus maxillae
Proc. coronoideus mandibulae
Caput (Condylus) mandibulae
Arcus anterior atlantis
Dens axis
Cellulae mastoideae
Os occipitale
Protuberantia occipitalis externa

Skull: Midsagittal Section

See also Plates 44, 46

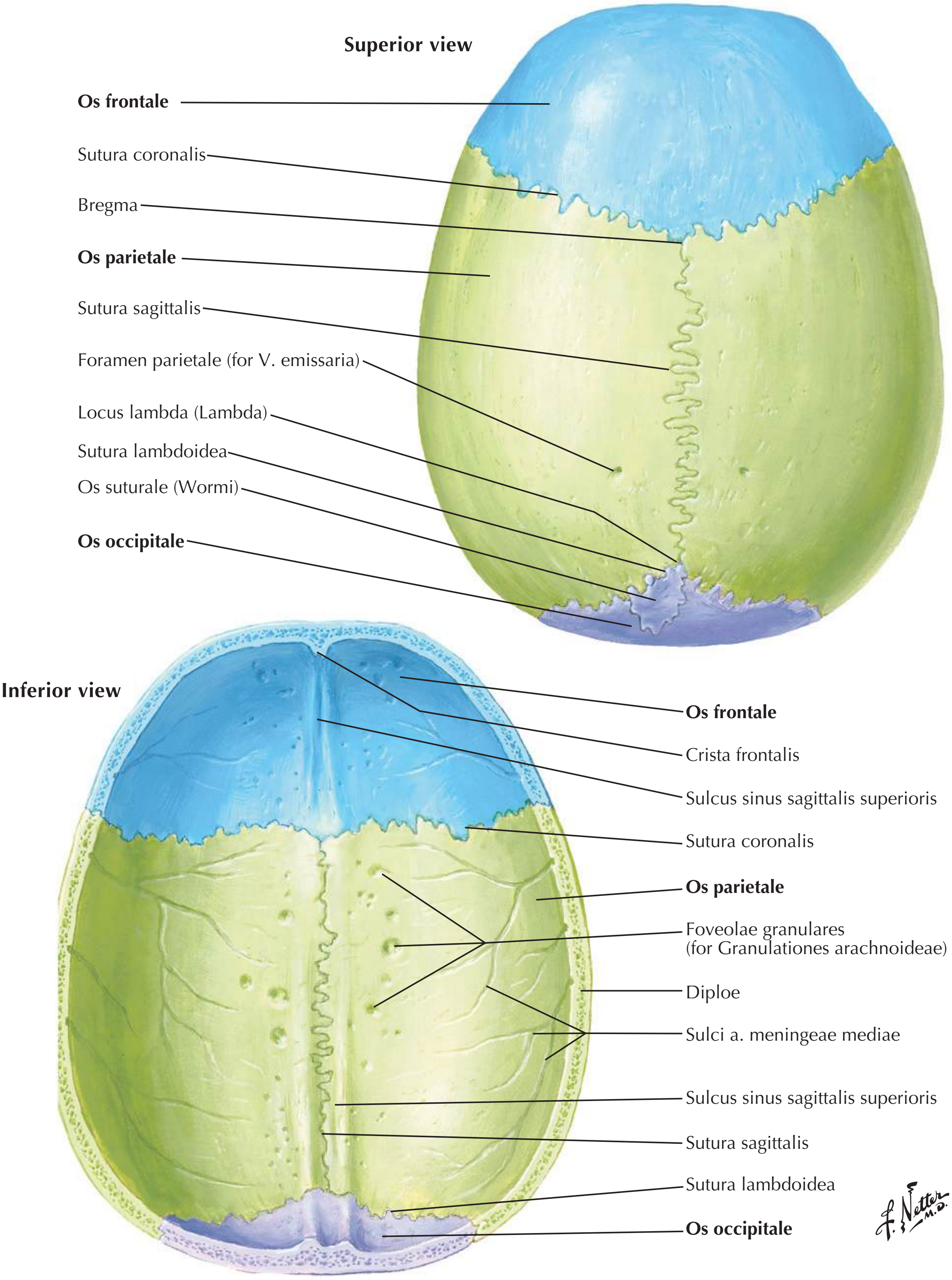

Os sphenoideum
Ala major
Ala minor
Proc. clinoideus anterior
Canalis opticus
Sella turcica
Sinus sphenoideus
Corpus ossis sphenoidei
Laminae medialis and lateralis proc. pterygoidei
Os frontale
Sinus frontalis
Os ethmoideum
Crista galli
Lamina cribrosa
Lamina perpendicularis
Os nasale
Concha nasalis inferior
Maxilla
Spina nasalis anterior
Facies nasalis
Canalis incisivus
Proc. palatinus
Proc. alveolaris
Sutura coronalis
Sulci a. meningeae mediae
Os parietale
Os temporale
Pars squamosa
Pars petrosa
Meatus acusticus internus
Sulcus sinus petrosi superioris
Apertura externa canaliculi vestibuli
Sulcus sinus sigmoidei
Sutura lambdoidea
Os occipitale
Sulcus sinus transversi
Protuberantia occipitalis externa
Foramen jugulare
Sulcus sinus petrosi inferioris
Canalis n. hypoglossi
Foramen magnum
Condylus occipitalis
Pars basilaris
Vomer
Os palatinum


Os frontale
Os nasale
Os ethmoideum
Lamina cribrosa
Concha nasalis superior
Concha nasalis media
Os lacrimale
Concha nasalis inferior
Maxilla
Facies nasalis
Proc. palatinus
Proc. alveolaris
Apertura sinus spenoidei
Foramen sphenopalatinum
Os sphenoideum
Corpus ossis sphenoidei
Lamina medialis
Lamina lateralis
Proc. pterygoideus
Hamulus pterygoideus
Os palatinum
Lamina perpendicularis
Lamina horizontalis

View of lateral nasal wall with nasal septum removed

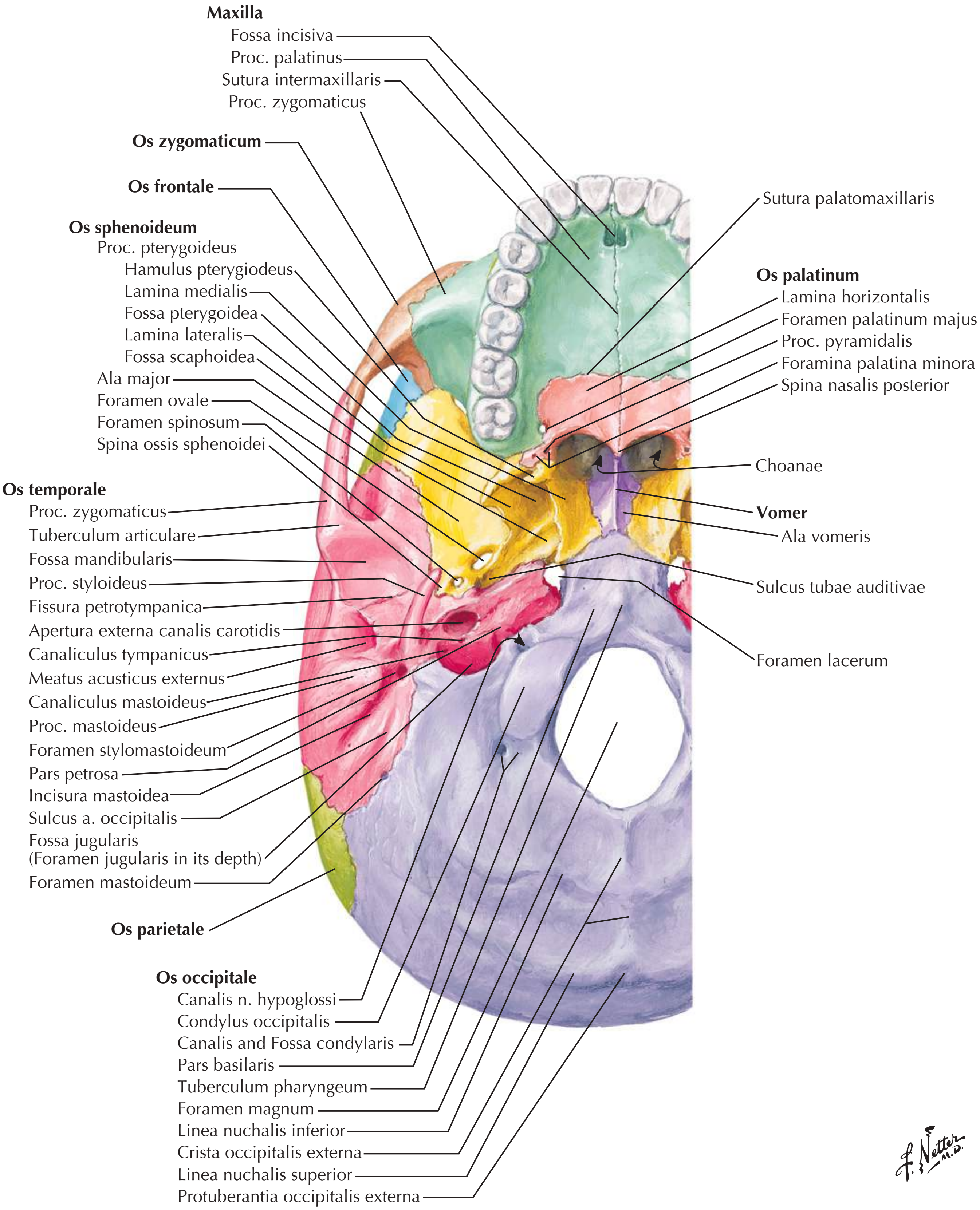
Calvaria

See also Plates 111, 112


Superior view
Os frontale
Sutura coronalis
Bregma
Os parietale
Sutura sagittalis
Foramen parietale (for V. emissaria)
Locus lambda (Lambda)
Sutura lambdoidea
Os suturale (Wormi)
Os occipitale
Inferior view
Os frontale
Crista frontalis
Sulcus sinus sagittalis superioris
Sutura coronalis
Os parietale
Foveolae granulares
(for Granulationes arachnoideae)
Diploe
Sulci a. meningeae mediae
Sulcus sinus sagittalis superioris
Sutura sagittalis
Sutura lambdoidea
Os occipitale
F. Netter M.D.

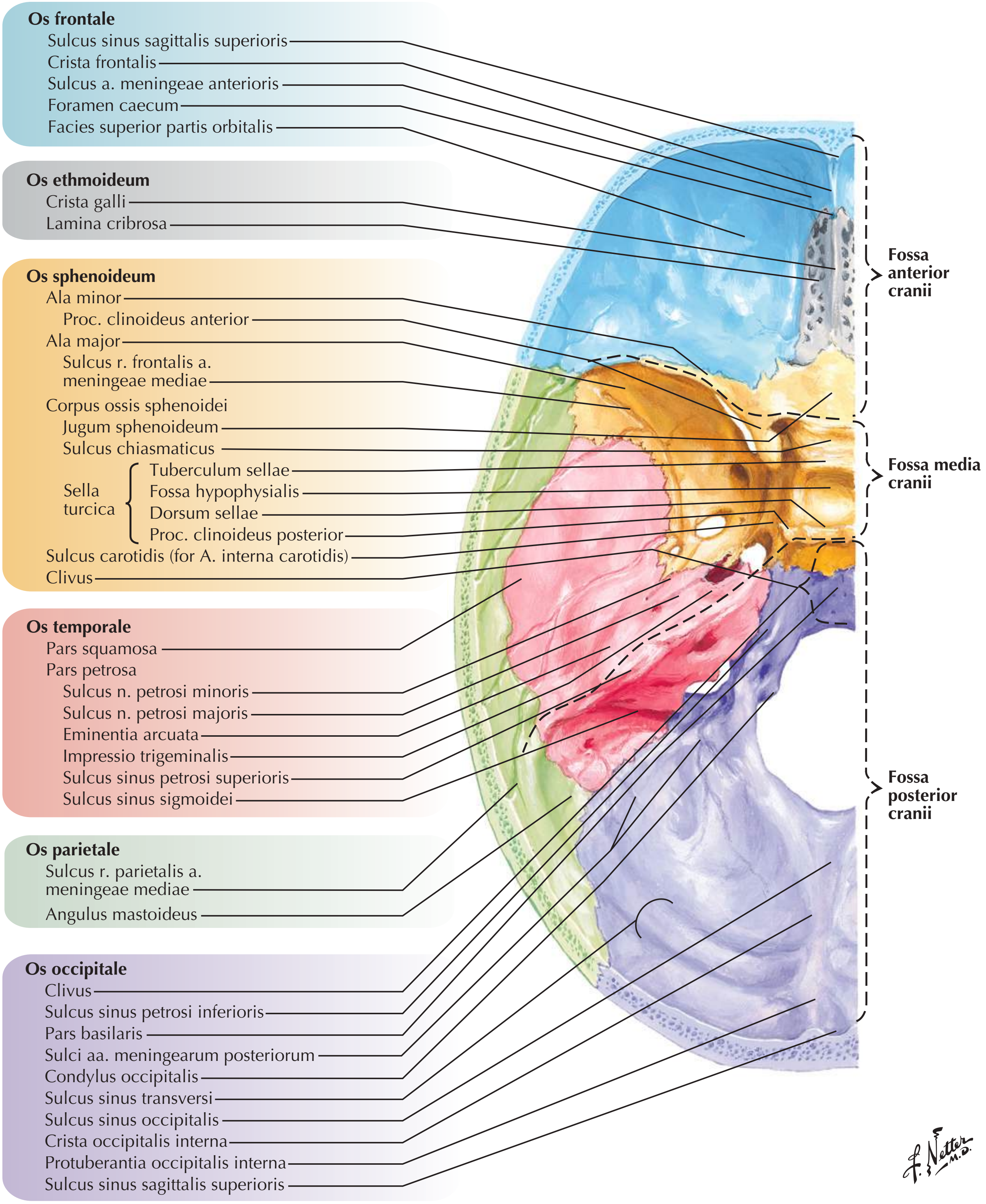
Cranial Base: Inferior View

See also Plate 19


Maxilla
Fossa incisiva
Proc. palatinus
Sutura intermaxillaris
Proc. zygomaticus
Os zygomaticum
Os frontale
Os sphenoideum
Proc. pterygoideus
Hamulus pterygiodeus
Lamina medialis
Fossa pterygoidea
Lamina lateralis
Fossa scaphoidea
Ala major
Foramen ovale
Foramen spinosum
Spina ossis sphenoidei
Os temporale
Proc. zygomaticus
Tuberculum articulare
Fossa mandibularis
Proc. styloideus
Fissura petrotympanica
Apertura externa canalis carotidis
Canaliculus tympanicus
Meatus acusticus externus
Canaliculus mastoideus
Proc. mastoideus
Foramen stylomastoideum
Pars petrosa
Incisura mastoidea
Sulcus a. occipitalis
Fossa jugularis
(Foramen jugularis in its depth)
Foramen mastoideum
Os parietale
Os occipitale
Canalis n. hypoglossi
Condylus occipitalis
Canalis and Fossa condylaris
Pars basilaris
Tuberculum pharyngeum
Foramen magnum
Linea nuchalis inferior
Crista occipitalis externa
Linea nuchalis superior
Protuberantia occipitalis externa
Sutura palatomaxillaris
Os palatinum
Lamina horizontalis
Foramen palatinum majus
Proc. pyramidalis
Foramina palatina minora
Spina nasalis posterior
Choanae
Vomer
Ala vomeris
Sulcus tubae auditivae
Foramen lacerum

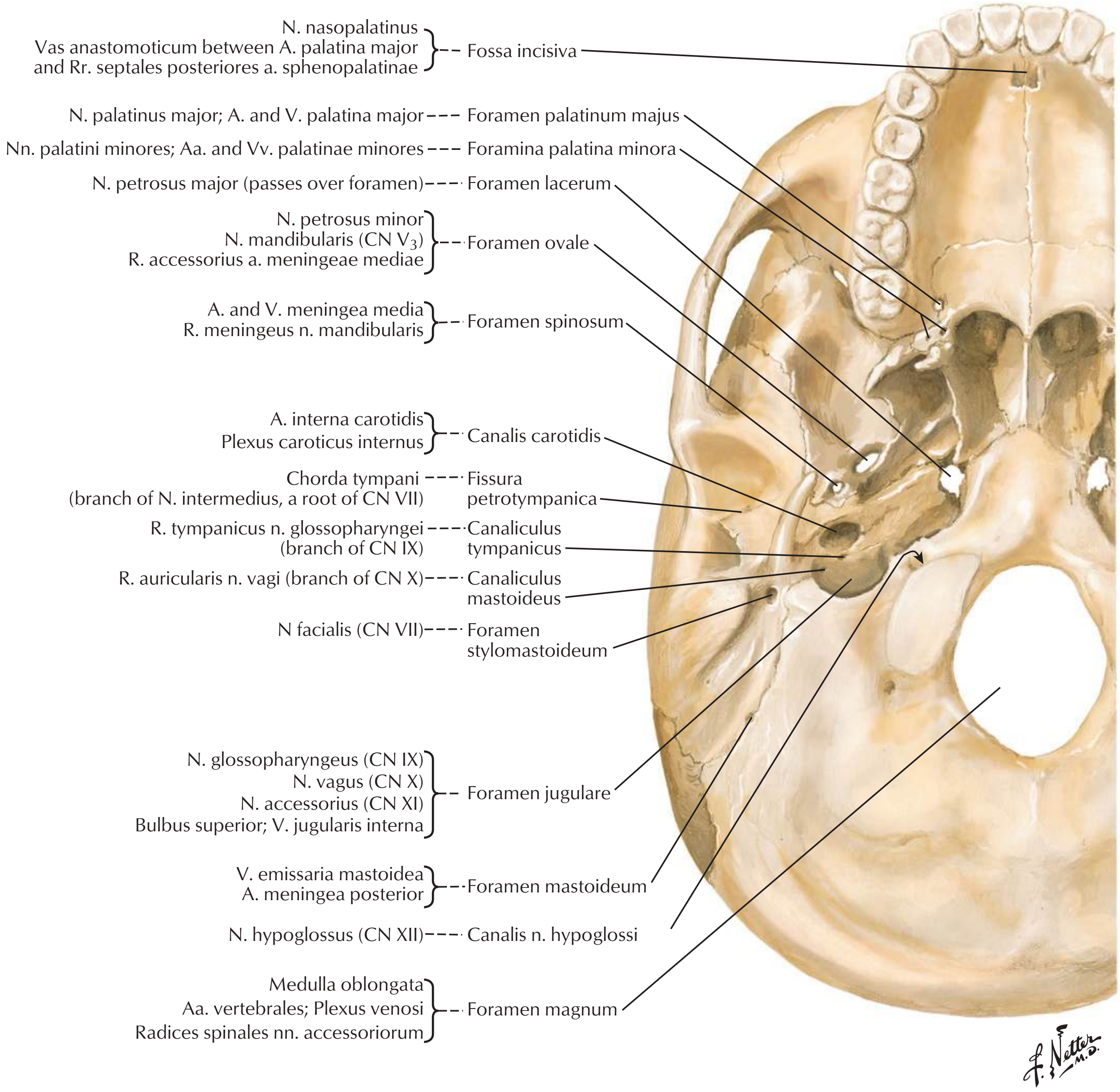
Cranial Base: Superior View

See also Plates 20, 115


Os frontale
Sulcus sinus sagittalis superioris
Crista frontalis
Sulcus a. meningeae anterioris
Foramen caecum
Facies superior partis orbitalis
Os ethmoideum
Crista galli
Lamina cribrosa
Os sphenoideum
Ala minor
Proc. clinoideus anterior
Ala major
Sulcus r. frontalis a. meningeae mediae
Corpus ossis sphenoidei
Jugum sphenoideum
Sulcus chiasmaticus
Sella turcica
Tuberculum sellae
Fossa hypophysialis
Dorsum sellae
Proc. clinoideus posterior
Sulcus carotidis (for A. interna carotidis)
Clivus
Os temporale
Pars squamosa
Pars petrosa
Sulcus n. petrosi minoris
Sulcus n. petrosi majoris
Eminentia arcuata
Impressio trigeminalis
Sulcus sinus petrosi superioris
Sulcus sinus sigmoidei
Os parietale
Sulcus r. parietalis a. meningeae mediae
Angulus mastoideus
Os occipitale
Clivus
Sulcus sinus petrosi inferioris
Pars basilaris
Sulci aa. meningearum posteriorum
Condylus occipitalis
Sulcus sinus transversi
Sulcus sinus occipitalis
Crista occipitalis interna
Protuberantia occipitalis interna
Sulcus sinus sagittalis superioris
Fossa anterior cranii
Fossa media cranii
Fossa posterior cranii
F. Netter M.D.

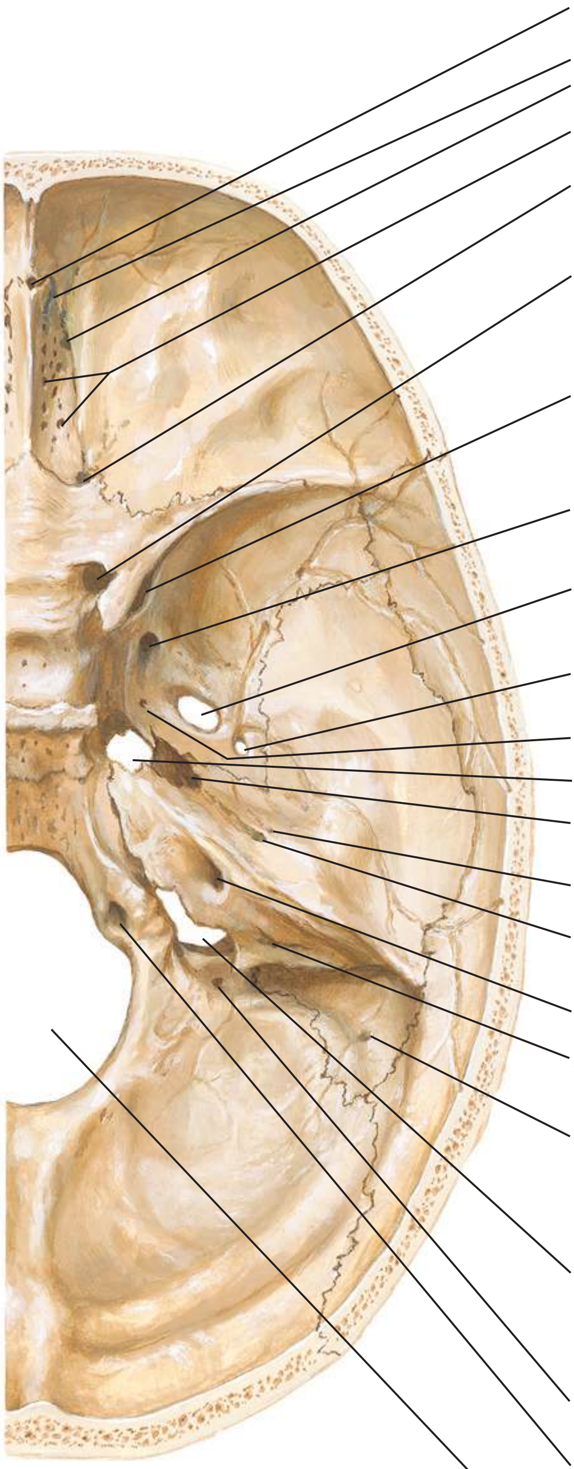
Foramina and Canals of Cranial Base: Inferior View

See also Plate 17


N. nasopalatinus
Vas anastomoticum between A. palatina major and Rr. septales posteriores a. sphenopalatinae
Fossa incisiva
N. palatinus major; A. and V. palatina major
Foramen palatinum majus
Nn. palatini minores; Aa. and Vv. palatinae minores
Foramina palatina minora
N. petrosus major (passes over foramen)
Foramen lacerum
N. petrosus minor
N. mandibularis (CN V_3)
R. accessorius a. meningeae mediae
Foramen ovale
A. and V. meningea media
R. meningeus n. mandibularis
Foramen spinosum
A. interna carotidis
Plexus caroticus internus
Canalis carotidis
Chorda tympani (branch of N. intermedius, a root of CN VII)
Fissura petrotympanica
R. tympanicus n. glossopharyngei (branch of CN IX)
Canaliculus tympanicus
R. auricularis n. vagi (branch of CN X)
Canaliculus mastoideus
N facialis (CN VII)
Foramen stylomastoideum
N. glossopharyngeus (CN IX)
N. vagus (CN X)
N. accessorius (CN XI)
Bulbus superior; V. jugularis interna
Foramen jugulare
V. emissaria mastoidea
A. meningea posterior
Foramen mastoideum
N. hypoglossus (CN XII)
Canalis n. hypoglossi
Medulla oblongata
Aa. vertebrales; Plexus venosi
Radices spinales nn. accessoriorum
Foramen magnum
F. Netter M.D.

Foramina and Canals of Cranial Base: Superior View

See also Plates 18, 115

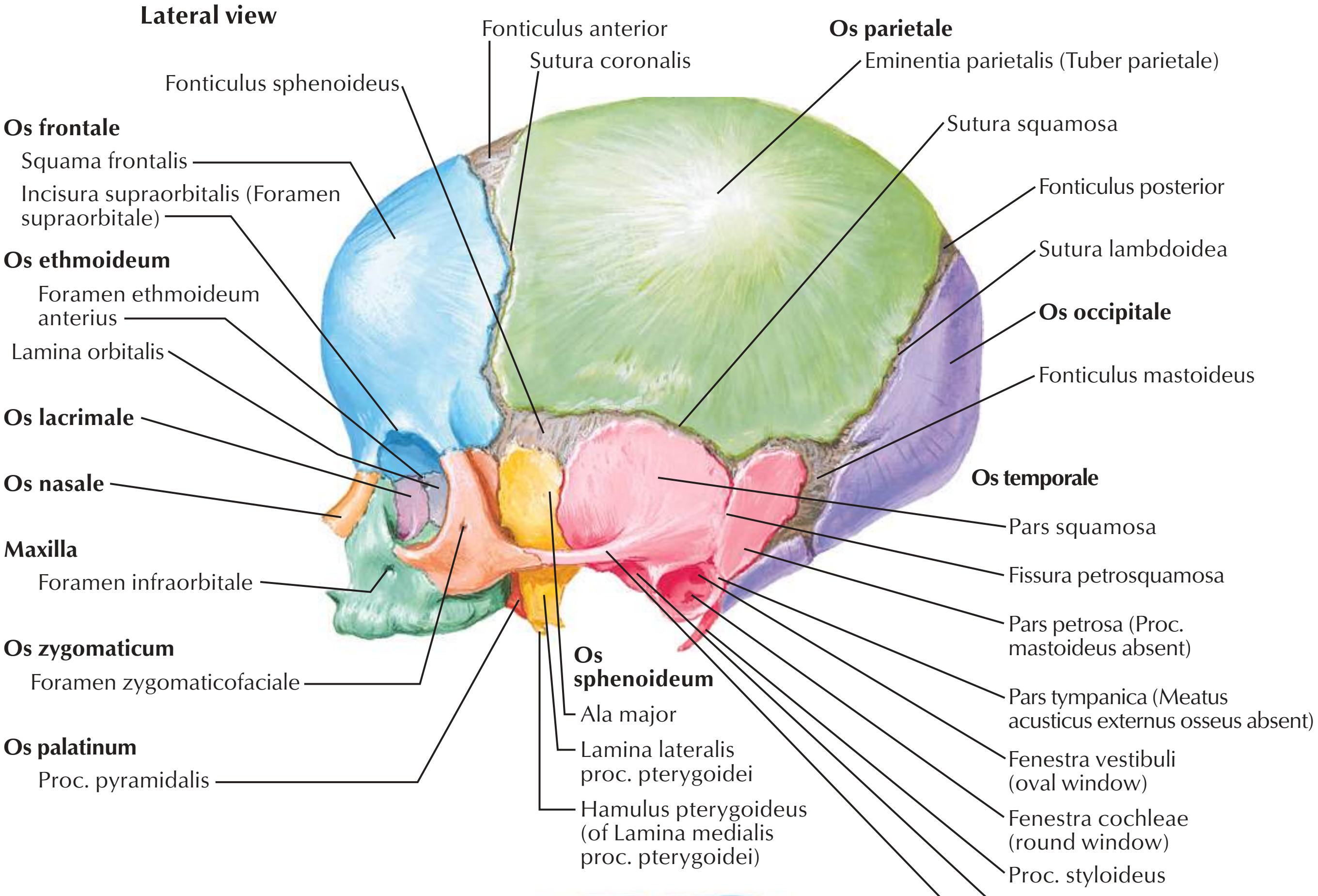


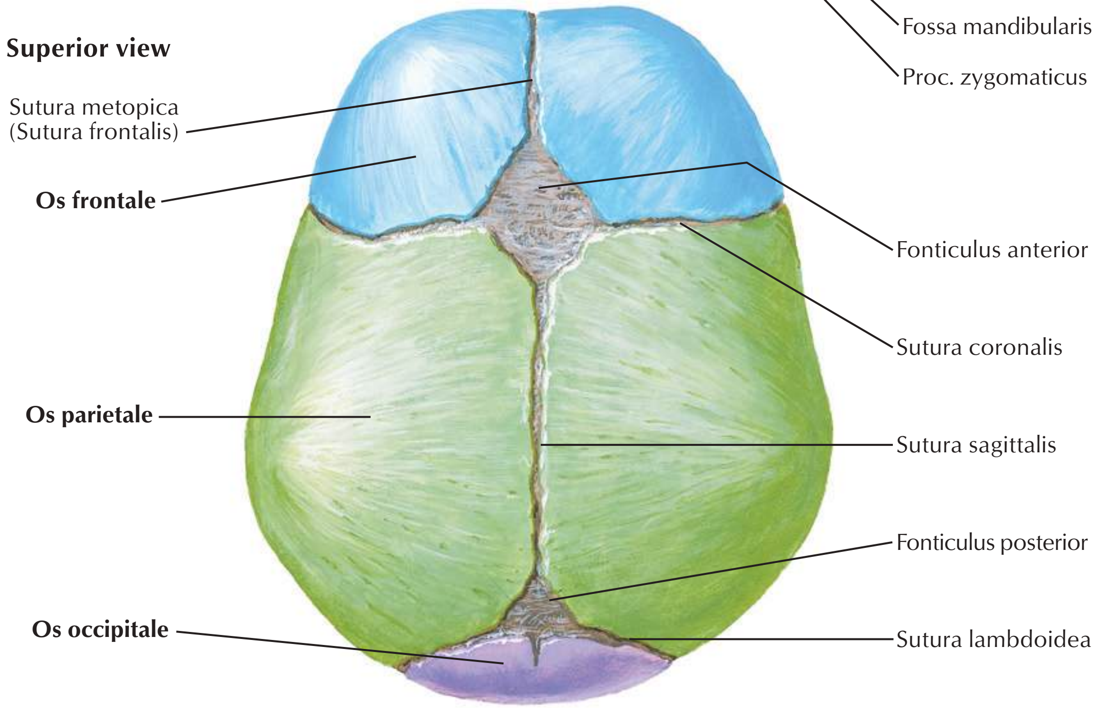
Foramen caecum	V. emissaria to Sinus sagittalis superior
Fissura nasalis (nasal slit) Foramen ethmoideum anterius	A. and V. ethmoidea anterior; N. ethmoideus anterior
Foramina cribrosa	N. olfactorius (CN I)
Foramen ethmoideum posterius	A. and V. ethmoidea posterior; N. ethmoideus posterior
Canalis opticus	N. opticus (CN II) A. ophthalmica
Fissura orbitalis superior	N. oculomotorius (CN III) N. trochlearis (CN IV) Nn. lacrimalis, frontalis and nasociliaris (branches of N. ophthalmicus [CN V_1]) N. abducens (CN VI) V. ophthalmica superior
Foramen rotundum	N. maxillaris (CN V_2)
Foramen ovale	N. mandibularis (CN V_3) R. accessorius a. meningeae mediae N. petrosus minor
Foramen spinosum	A. and V. meningea media R. meningeus n. mandibularis
Foramen venosum (Vesalii) (inconstant)	
Foramen lacerum	N. petrosus major (passes over foramen)
Canalis carotidis	A. interna carotidis Plexus caroticus internus
Hiatus canalis n. petrosi minoris	N. petrosus minor
Hiatus canalis n. petrosi majoris	N. petrosus major
Meatus acusticus internus	N. facialis (CN VII) N. vestibulocochlearis (CN VIII) A. labyrinthi
Apertura externa canaliculi vestibuli	Ductus endolymphaticus
Foramen mastoideum (inconstant)	V. emissaria (and occasional branch of A. occipitalis)
Foramen jugulare	Sinus petrosus inferior N. glossopharyngeus (CN IX) N. vagus (CN X) N. accessorius (CN XI) Sinus sigmoideus A. meningea posterior
Canalis condylaris (inconstant)	V. emissaria; A. meningea posterior (branch of A. pharyngea ascendens)
Canalis n. hypoglossi	N. hypoglossus (CN XII)
Foramen magnum	Medulla oblongata Meninges Aa. vertebrales; Plexus venosi Rr. meningei aa. vertebralium Radices spinales nn. accessorii

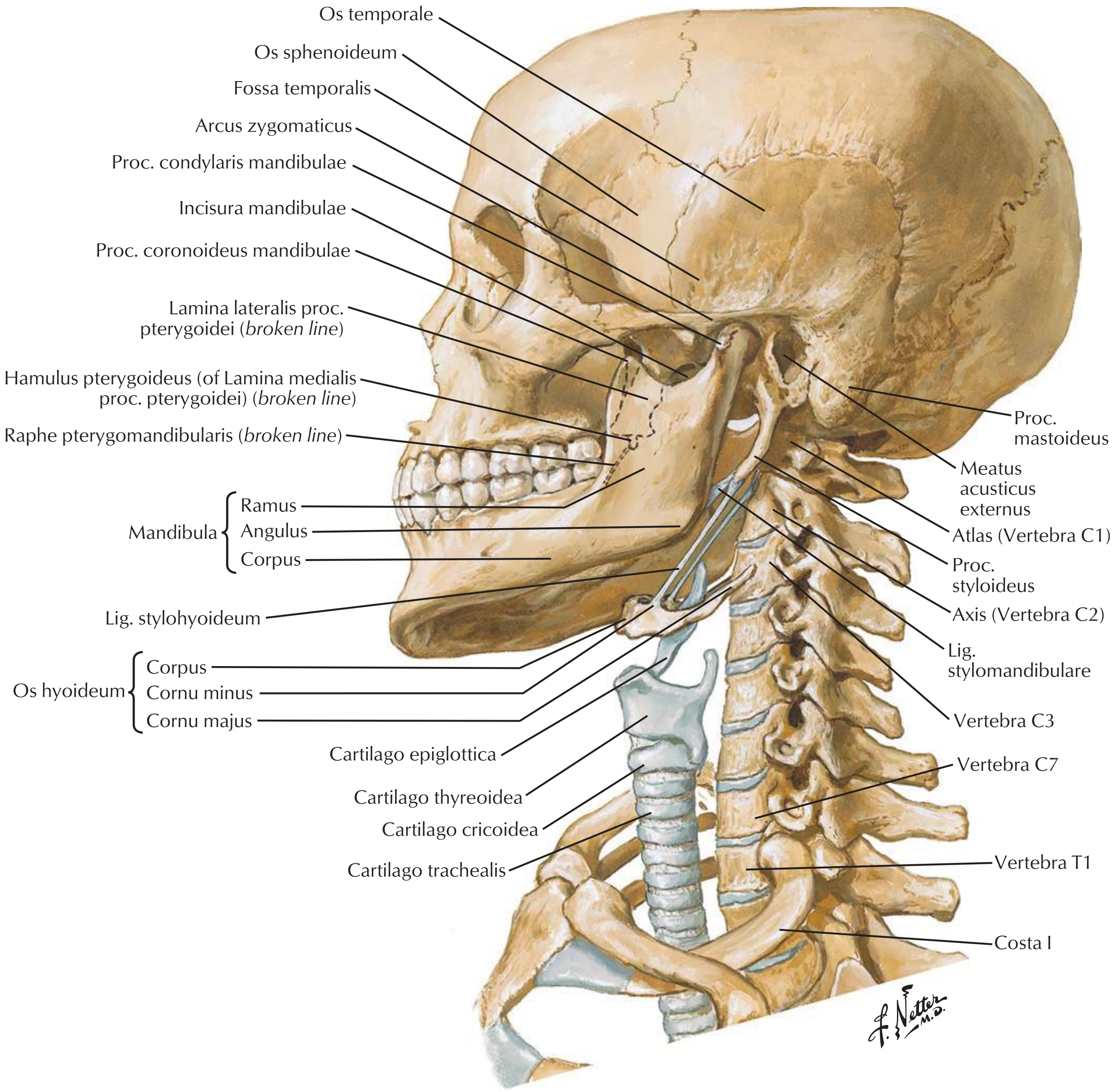
F. Netter M.D.

Skull of Newborn

See also Plates 13, 16

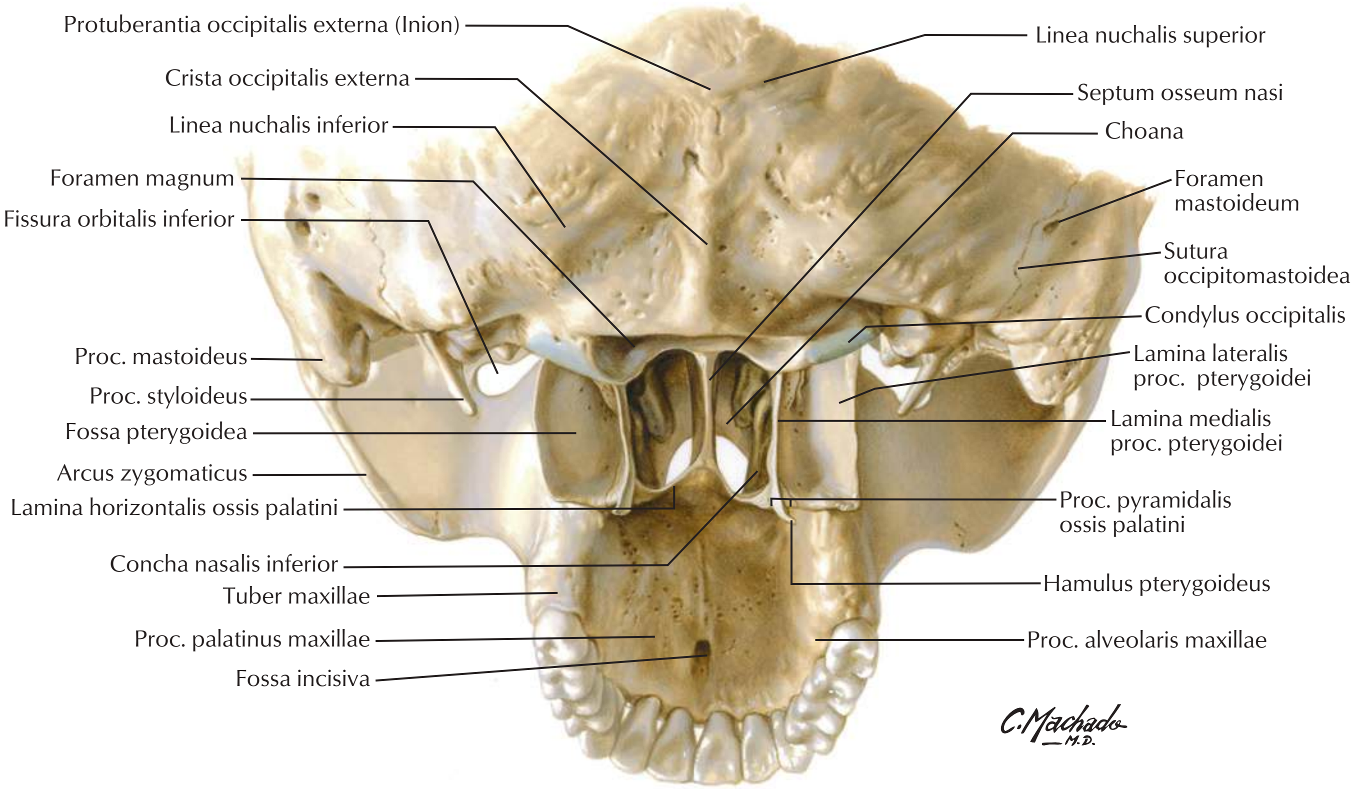

Lateral view
Fonticulus anterior
Sutura coronalis
Os parietale
Eminentia parietalis (Tuber parietale)
Fonticulus sphenoideus
Os frontale
Squama frontalis
Incisura supraorbitalis (Foramen supraorbitale)
Os ethmoideum
Foramen ethmoideum anterius
Lamina orbitalis
Os lacrimale
Os nasale
Maxilla
Foramen infraorbitale
Os zygomaticum
Foramen zygomaticofaciale
Os palatinum
Proc. pyramidalis
Sutura squamosa
Fonticulus posterior
Sutura lambdoidea
Os occipitale
Fonticulus mastoideus
Os temporale
Pars squamosa
Fissura petrosquamosa
Pars petrosa (Proc. mastoideus absent)
Pars tympanica (Meatus acusticus externus osseus absent)
Fenestra vestibuli (oval window)
Fenestra cochleae (round window)
Proc. styloideus
Fossa mandibularis
Proc. zygomaticus
Os sphenoideum
Ala major
Lamina lateralis proc. pterygoidei
Hamulus pterygoideus (of Lamina medialis proc. pterygoidei)


Superior view
Sutura metopica (Sutura frontalis)
Os frontale
Os parietale
Os occipitale
Fonticulus anterior
Sutura coronalis
Sutura sagittalis
Fonticulus posterior
Sutura lambdoidea

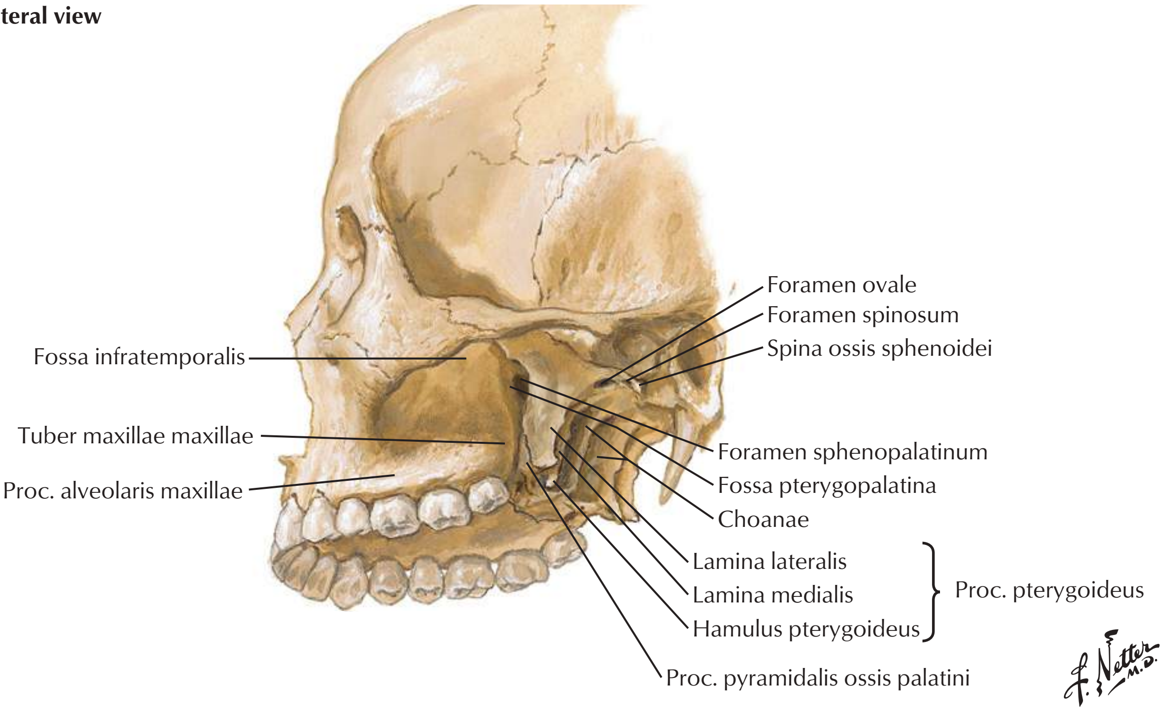

Os temporale
Os sphenoideum
Fossa temporalis
Arcus zygomaticus
Proc. condylaris mandibulae
Incisura mandibulae
Proc. coronoideus mandibulae
Lamina lateralis proc. pterygoidei (*broken line*)
Hamulus pterygoideus (of Lamina medialis proc. pterygoidei) (*broken line*)
Raphe pterygomandibularis (*broken line*)
Mandibula
Ramus
Angulus
Corpus
Lig. stylohyoideum
Os hyoideum
Corpus
Cornu minus
Cornu majus
Cartilago epiglottica
Cartilago thyreoidea
Cartilago cricoidea
Cartilago trachealis
Proc. mastoideus
Meatus acusticus externus
Atlas (Vertebra C1)
Proc. styloideus
Axis (Vertebra C2)
Lig. stylomandibulare
Vertebra C3
Vertebra C7
Vertebra T1
Costa I
F. Netter M.D.

See also Plates 46, 47, 48

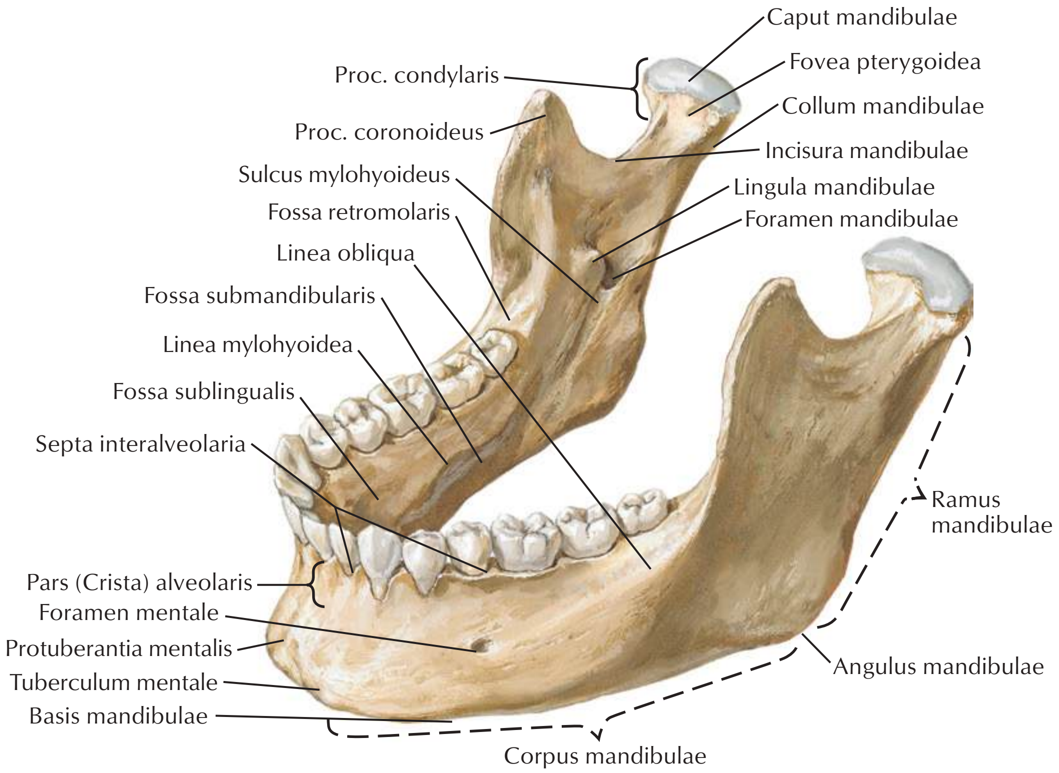
Posterior view

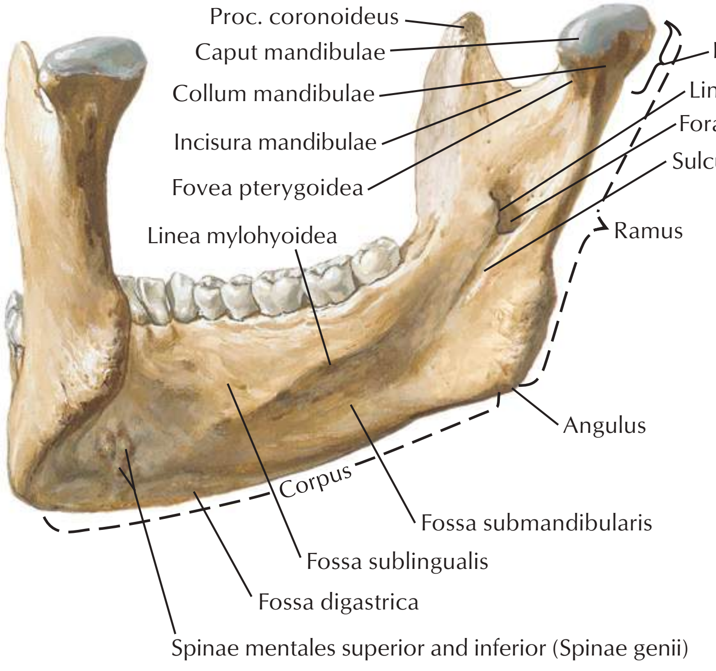

Protuberantia occipitalis externa (Inion)
Crista occipitalis externa
Linea nuchalis inferior
Foramen magnum
Fissura orbitalis inferior
Proc. mastoideus
Proc. styloideus
Fossa pterygoidea
Arcus zygomaticus
Lamina horizontalis ossis palatini
Concha nasalis inferior
Tuber maxillae
Proc. palatinus maxillae
Fossa incisiva
Linea nuchalis superior
Septum osseum nasi
Choana
Foramen mastoideum
Sutura occipitomastoidea
Condylus occipitalis
Lamina lateralis proc. pterygoidei
Lamina medialis proc. pterygoidei
Proc. pyramidalis ossis palatini
Hamulus pterygoideus
Proc. alveolaris maxillae
C. Machado M.D.

Inferolateral view

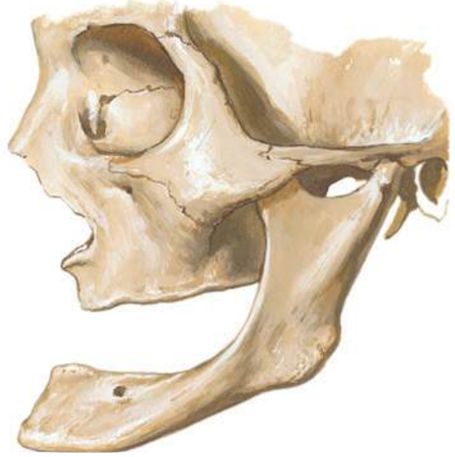

Fossa infratemporalis
Tuber maxillae maxillae
Proc. alveolaris maxillae
Foramen ovale
Foramen spinosum
Spina ossis sphenoidei
Foramen sphenopalatinum
Fossa pterygopalatina
Choanae
Lamina lateralis
Lamina medialis
Hamulus pterygoideus
Proc. pterygoideus
Proc. pyramidalis ossis palatini

See also Plates 55, 56


Caput mandibulae
Proc. condylaris
Fovea pterygoidea
Collum mandibulae
Proc. coronoideus
Incisura mandibulae
Sulcus mylohyoideus
Lingula mandibulae
Foramen mandibulae
Fossa retromolaris
Linea obliqua
Fossa submandibularis
Linea mylohyoidea
Fossa sublingualis
Septa interalveolaria
Ramus mandibulae
Pars (Crista) alveolaris
Foramen mentale
Protuberantia mentalis
Angulus mandibulae
Tuberculum mentale
Basis mandibulae
Corpus mandibulae


Proc. coronoideus
Caput mandibulae
Proc. condylaris
Collum mandibulae
Lingula mandibulae
Foramen mandibulae
Incisura mandibulae
Sulcus mylohyoideus
Fovea pterygoidea
Ramus
Linea mylohyoidea
Angulus
Corpus
Fossa submandibularis
Fossa sublingualis
Fossa digastrica
Spinae mentales superior and inferior (Spinae genii)

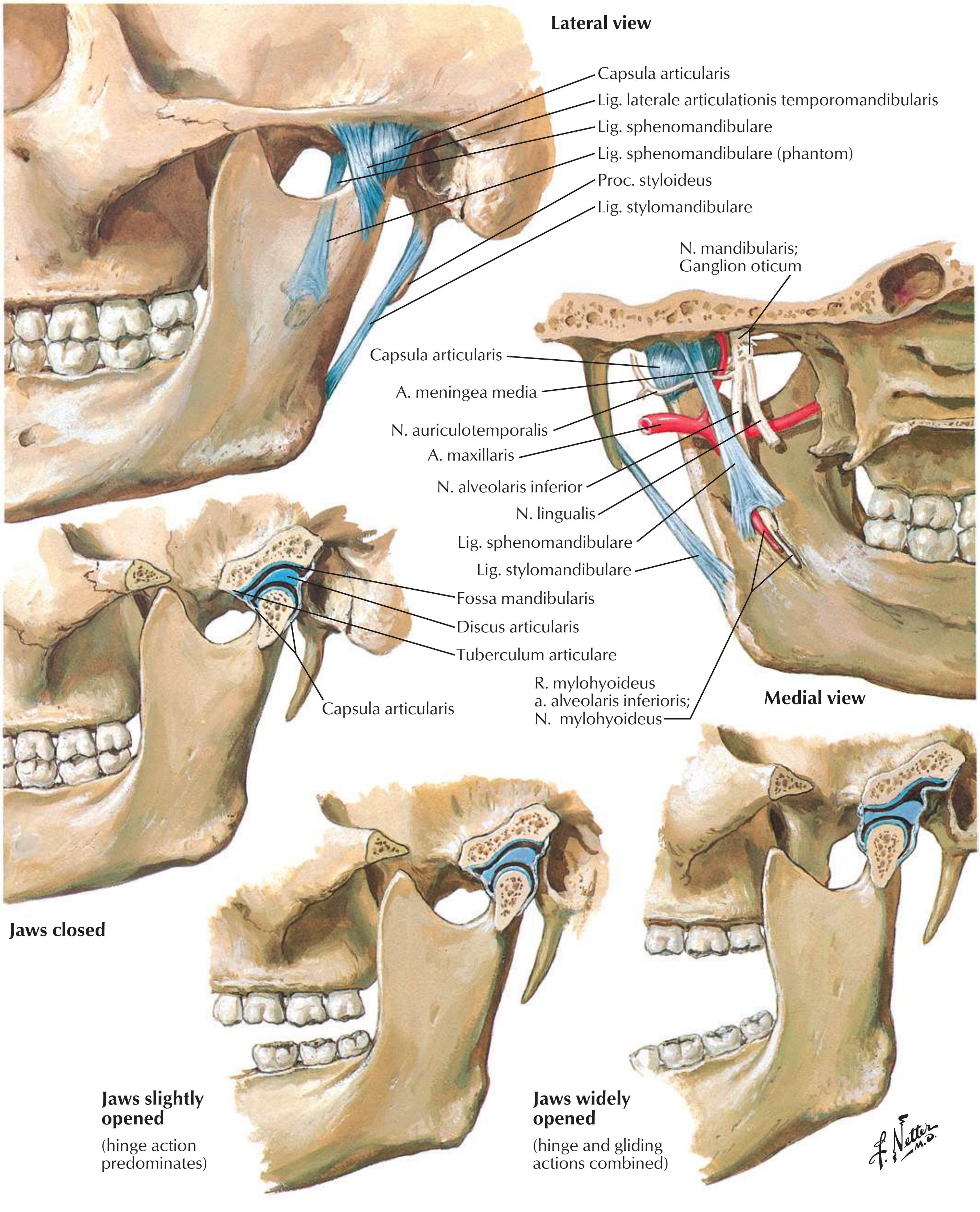
F. Netter M.D.



Mandible of aged person (edentulous)

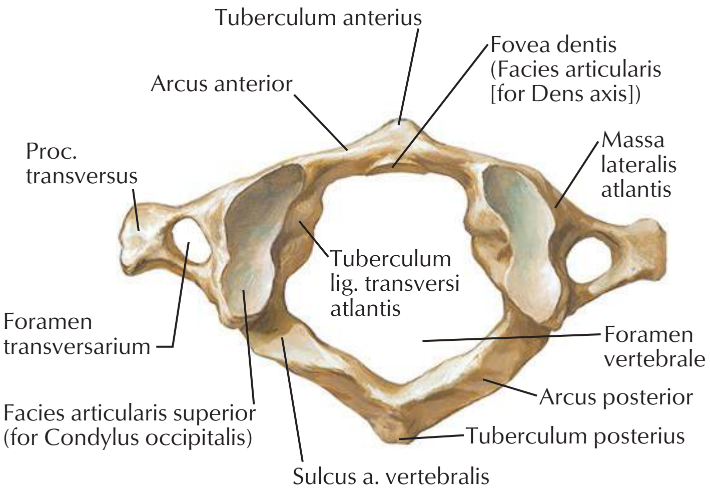
Temporomandibular Joint

See also Plate 56

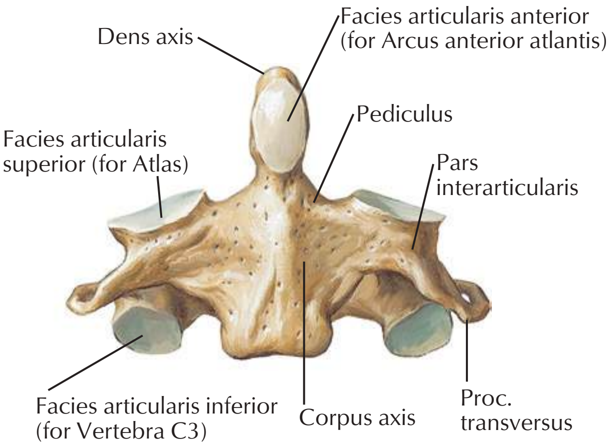

Lateral view
Capsula articularis
Lig. laterale articulationis temporomandibularis
Lig. sphenomandibulare
Lig. sphenomandibulare (phantom)
Proc. styloideus
Lig. stylomandibulare
N. mandibularis;
Ganglion oticum
Capsula articularis
A. meningea media
N. auriculotemporalis
A. maxillaris
N. alveolaris inferior
N. lingualis
Lig. sphenomandibulare
Lig. stylomandibulare
R. mylohyoideus
a. alveolaris inferioris;
N. mylohyoideus
Medial view
Fossa mandibularis
Discus articularis
Tuberculum articulare
Capsula articularis
Jaws closed
Jaws slightly opened
(hinge action predominates)
Jaws widely opened
(hinge and gliding actions combined)
F. Netter M.D.

Cervical Vertebrae: Atlas and Axis

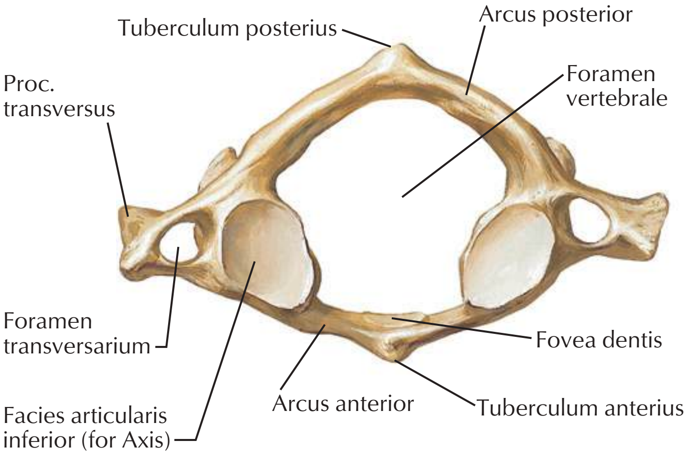
See also Plates 28, 30


Tuberculum anterius
Fovea dentis
(Facies articularis
[for Dens axis])
Arcus anterior
Proc.
transversus
Massa
lateralis
atlantis
Tuberculum
lig. transversi
atlantis
Foramen
transversarium
Foramen
vertebrale
Arcus posterior
Facies articularis superior
(for Condylus occipitalis)
Tuberculum posterius
Sulcus a. vertebralis

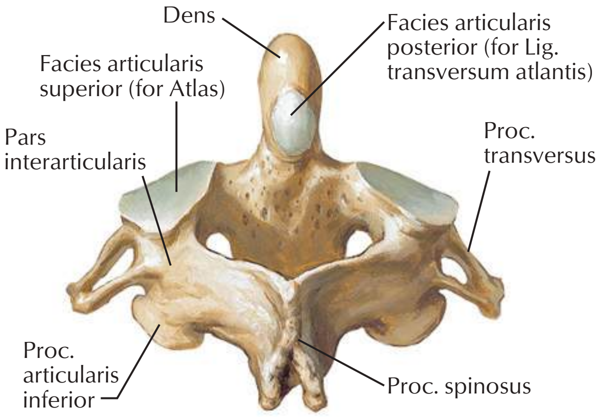
Atlas (Vertebra C1): superior view


Dens axis
Facies articularis anterior
(for Arcus anterior atlantis)
Pediculus
Facies articularis
superior (for Atlas)
Pars
interarticularis
Facies articularis inferior
(for Vertebra C3)
Corpus axis
Proc.
transversus

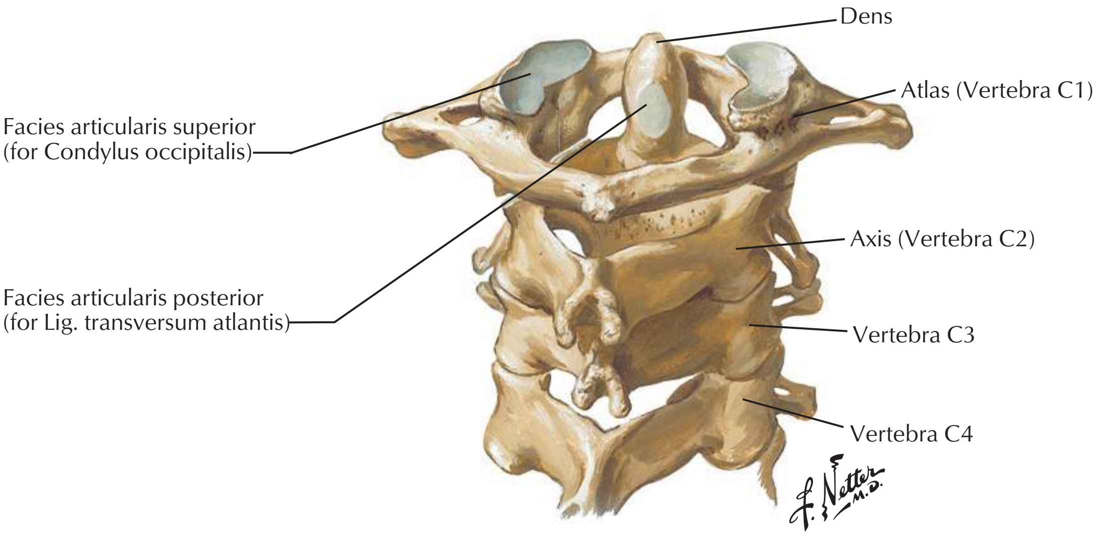
Axis (Vertebra C2): anterior view


Tuberculum posterius
Arcus posterior
Proc.
transversus
Foramen
vertebrale
Foramen
transversarium
Fovea dentis
Facies articularis
inferior (for Axis)
Arcus anterior
Tuberculum anterius

Atlas (Vertebra C1): inferior view


Dens
Facies articularis
posterior (for Lig.
transversum atlantis)
Facies articularis
superior (for Atlas)
Pars
interarticularis
Proc.
transversus
Proc.
articularis
inferior
Proc. spinosus

Axis (Vertebra C2): posterosuperior view

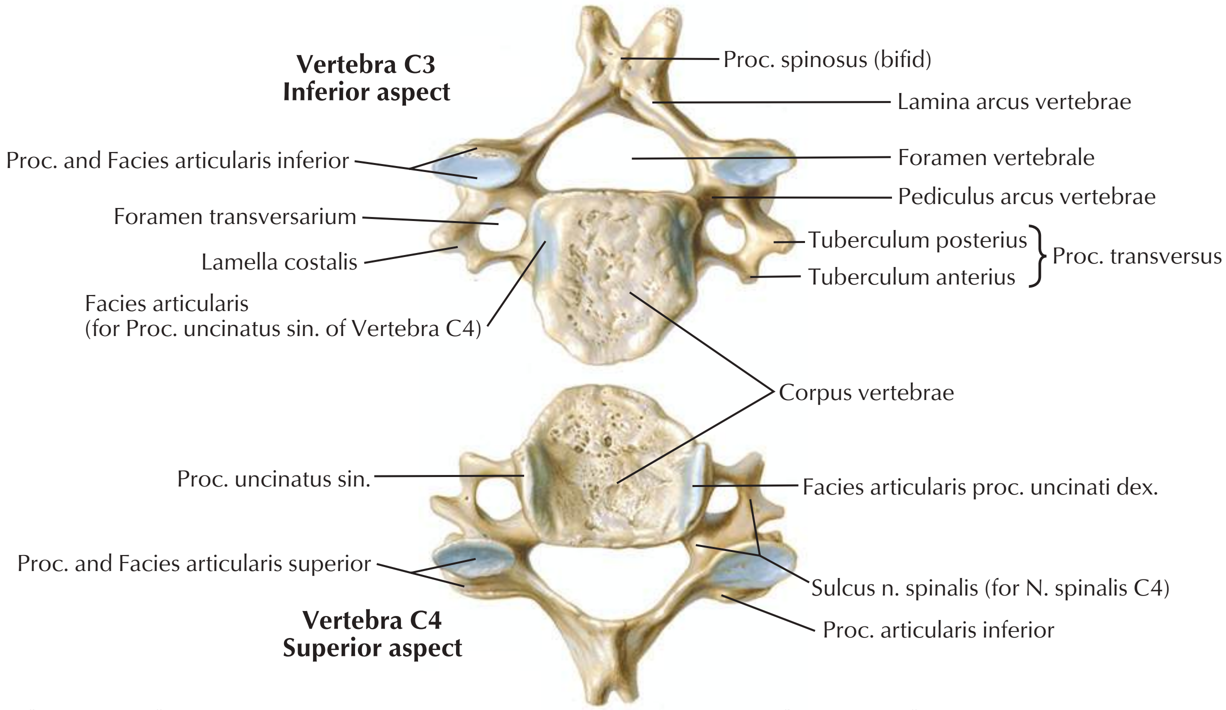

Dens
Atlas (Vertebra C1)
Facies articularis superior
(for Condylus occipitalis)
Axis (Vertebra C2)
Facies articularis posterior
(for Lig. transversum atlantis)
Vertebra C3
Vertebra C4
F. Netter M.D.

Upper vertebrae cervicales, assembled: posterosuperior view

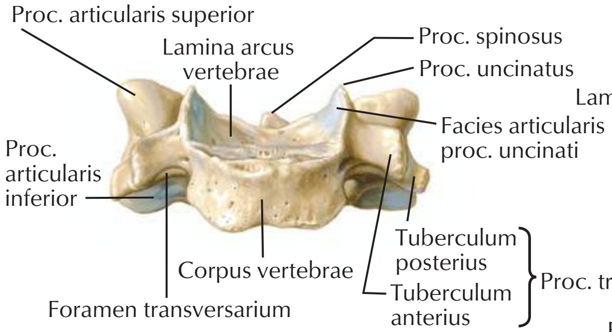
Cervical Vertebrae (continued)

See also Plates 28, 29

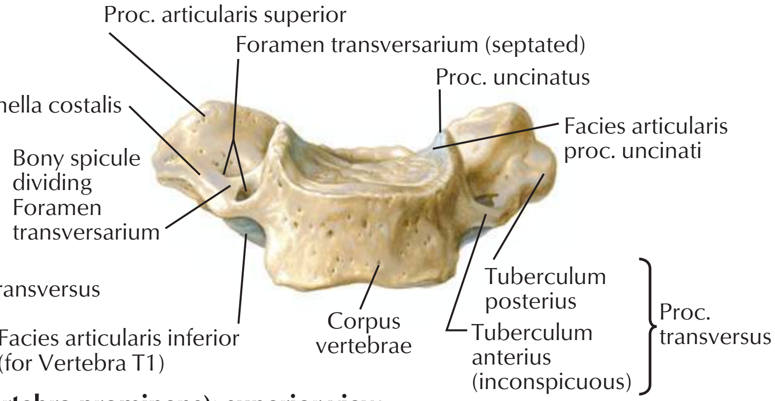
Inferior aspect of vertebra C3 and superior aspect of vertebra C4 showing the sites of the facets and uncovertebral articulations


Vertebra C3
Inferior aspect
Proc. spinosus (bifid)
Lamina arcus vertebrae
Proc. and Facies articularis inferior
Foramen vertebrale
Pediculus arcus vertebrae
Foramen transversarium
Tuberculum posterius
Lamella costalis
Tuberculum anterius
Proc. transversus
Facies articularis
(for Proc. uncinatus sin. of Vertebra C4)
Corpus vertebrae
Proc. uncinatus sin.
Facies articularis proc. uncinati dex.
Proc. and Facies articularis superior
Sulcus n. spinalis (for N. spinalis C4)
Vertebra C4
Superior aspect
Proc. articularis inferior

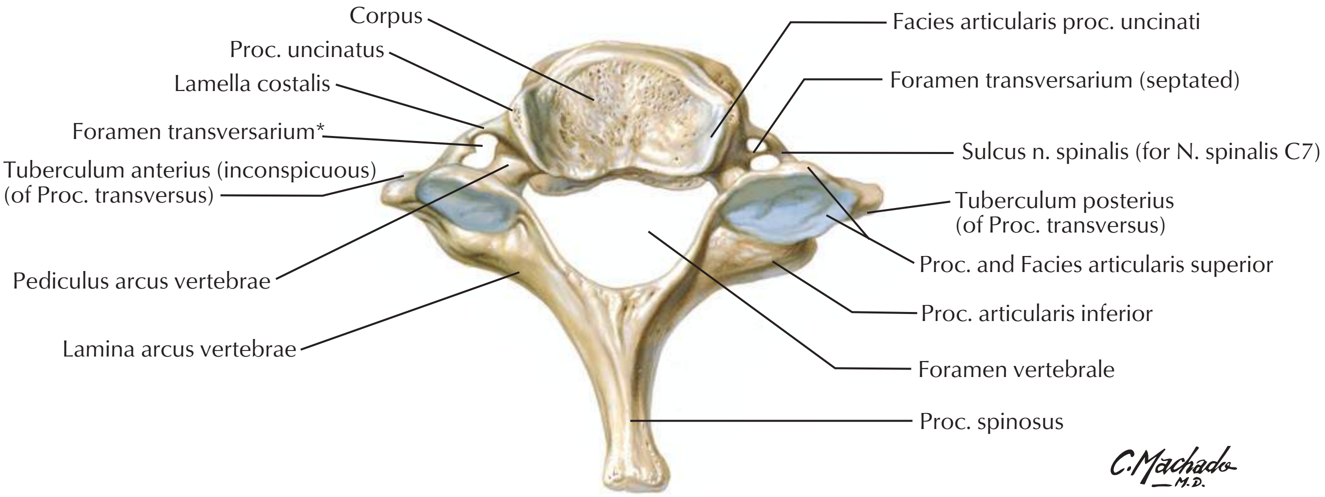
Vertebra cervicalis 4: anterior view


Proc. articularis superior
Lamina arcus vertebrae
Proc. spinosus
Proc. uncinatus
Facies articularis proc. uncinati
Proc. articularis inferior
Tuberculum posterius
Corpus vertebrae
Tuberculum anterius
Proc. transversus
Foramen transversarium

Vertebra cervicalis 7: anterior view


Proc. articularis superior
Foramen transversarium (septated)
Proc. uncinatus
Lamella costalis
Facies articularis proc. uncinati
Bony spicule dividing Foramen transversarium
Tuberculum posterius
Corpus vertebrae
Facies articularis inferior (for Vertebra T1)
Tuberculum anterius (inconspicuous)
Proc. transversus

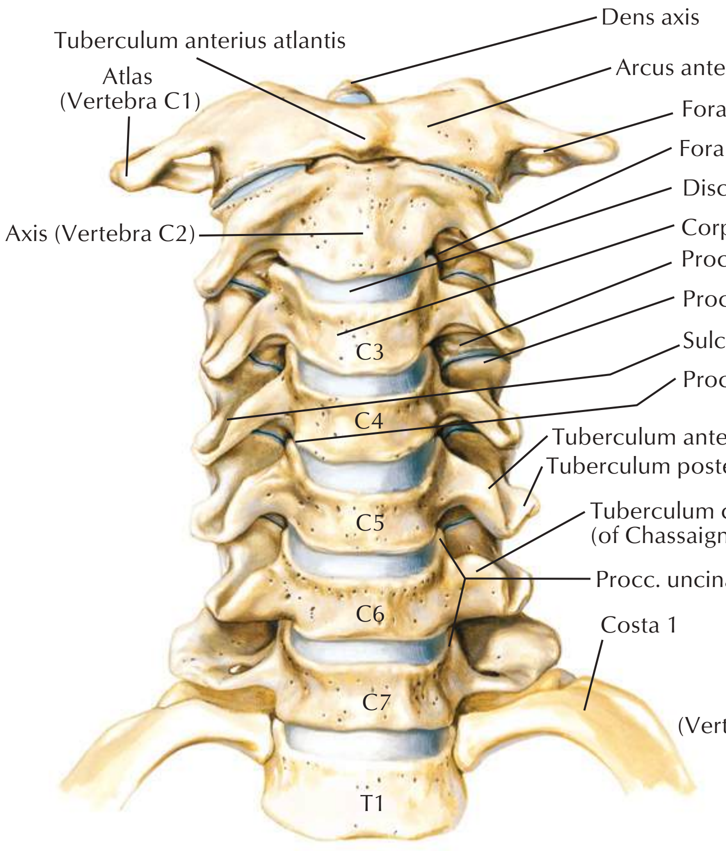
Vertebra cervicalis 7 (Vertebra prominens): superior view

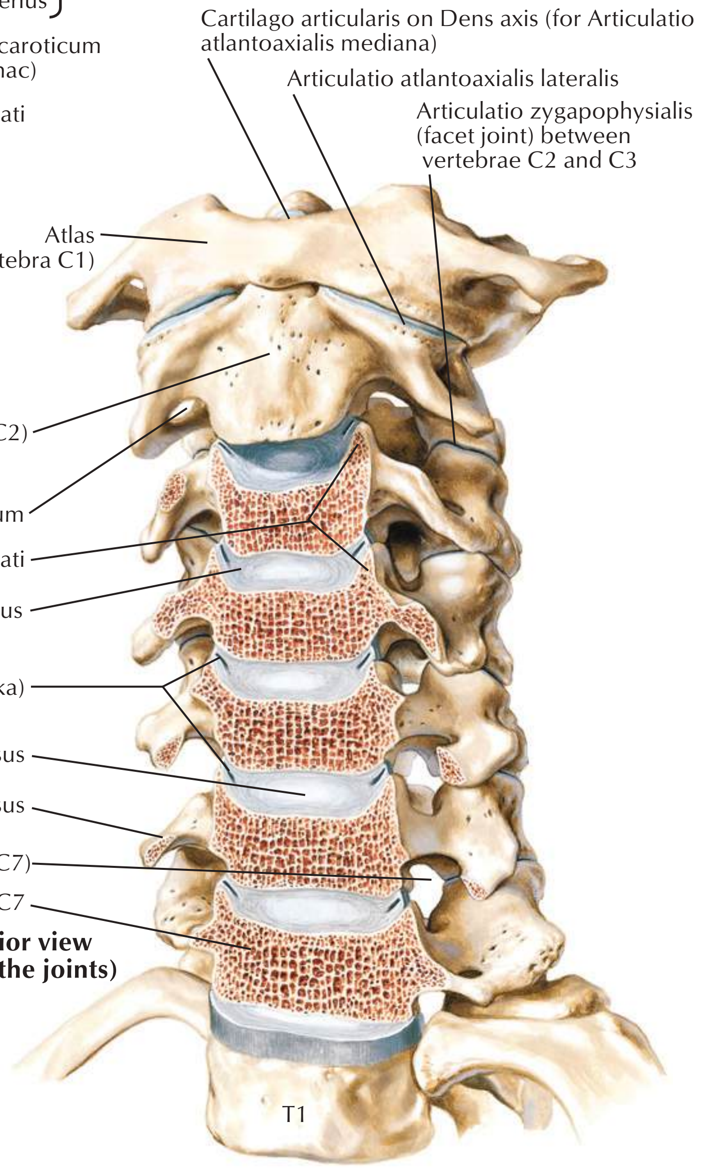

Corpus
Proc. uncinatus
Lamella costalis
Foramen transversarium*
Tuberculum anterius (inconspicuous)
(of Proc. transversus)
Pediculus arcus vertebrae
Lamina arcus vertebrae
Facies articularis proc. uncinati
Foramen transversarium (septated)
Sulcus n. spinalis (for N. spinalis C7)
Tuberculum posterius
(of Proc. transversus)
Proc. and Facies articularis superior
Proc. articularis inferior
Foramen vertebrale
Proc. spinosus
C. Machado M.D.

*The foramina transversaria of C7 transmit vv. vertebrales, but usually not the a. vertebralis, and are asymmetrical in this specimen.

See also Plate 29

Cervical vertebrae: anterior view

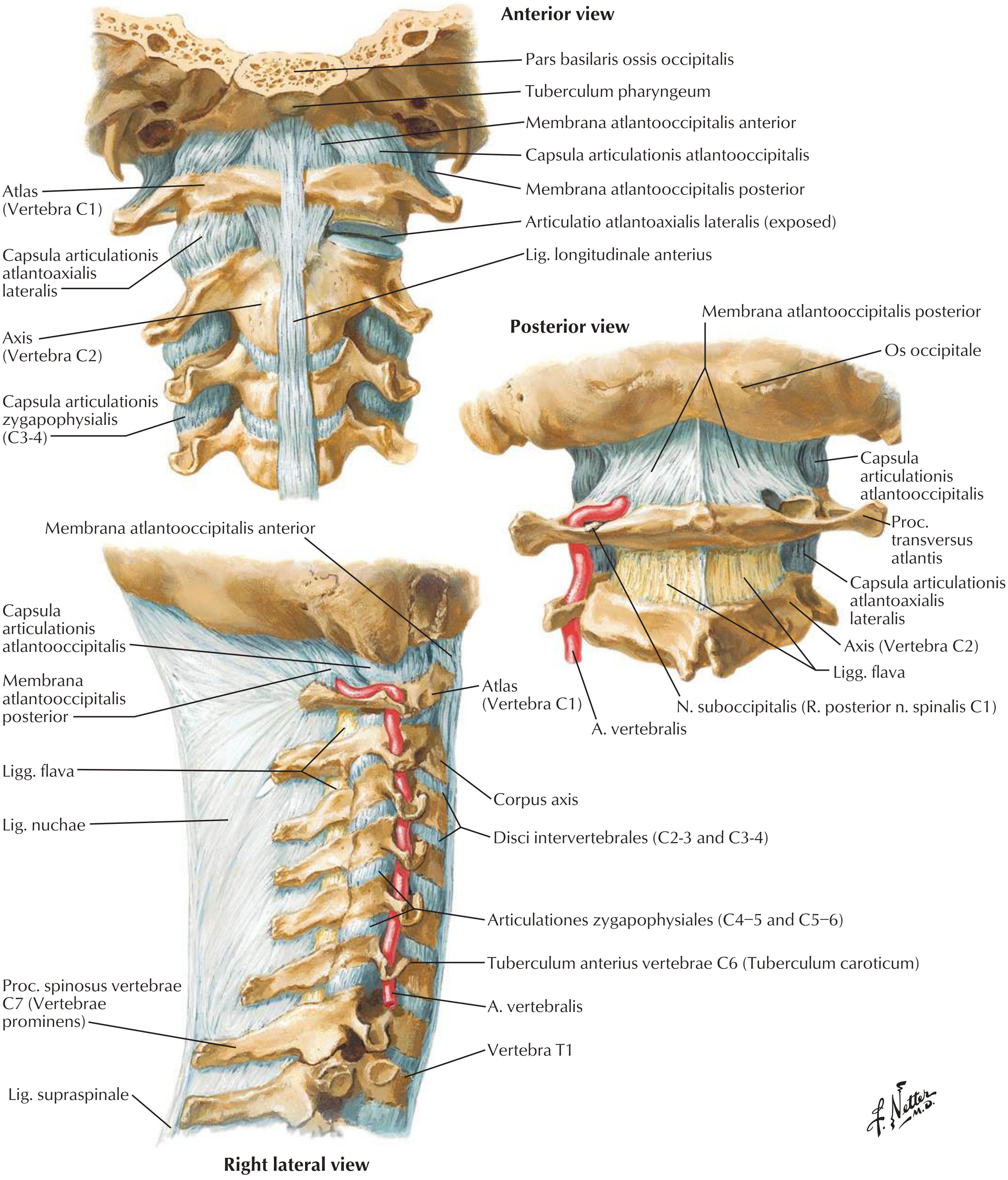

Dens axis
Tuberculum anterius atlantis
Arcus anterior atlantis
Atlas (Vertebra C1)
Foramen transversarium
Foramen intervertebrale (for N. spinalis C3)
Discus intervertebralis
Corpus vertebrae
Axis (Vertebra C2)
Proc. articularis inferior (vertebrae C3)
Proc. articularis superior (vertebrae C4)
C3
Sulcus n. spinalis
Proc. uncinatus (Uncus corporis)
C4
Tuberculum anterius
Tuberculum posterius
Proc. transversus
C5
Tuberculum caroticum (of Chassaignac)
Procc. uncinati
C6
Costa 1
C7
T1


Cartilago articularis on Dens axis (for Articulatio atlantoaxialis mediana)
Articulatio atlantoaxialis lateralis
Articulatio zygapophysialis (facet joint) between vertebrae C2 and C3
Atlas (Vertebra C1)
Axis (Vertebra C2)
Foramen transversarium
Procc. uncinati
Anulus fibrosus
Articulationes uncovertebrales (clefts of Luschka)
Nucleus pulposus
Proc. transversus
Foramen intervertebrale (for N. spinalis C7)
Corpus vertebrae C7
T1

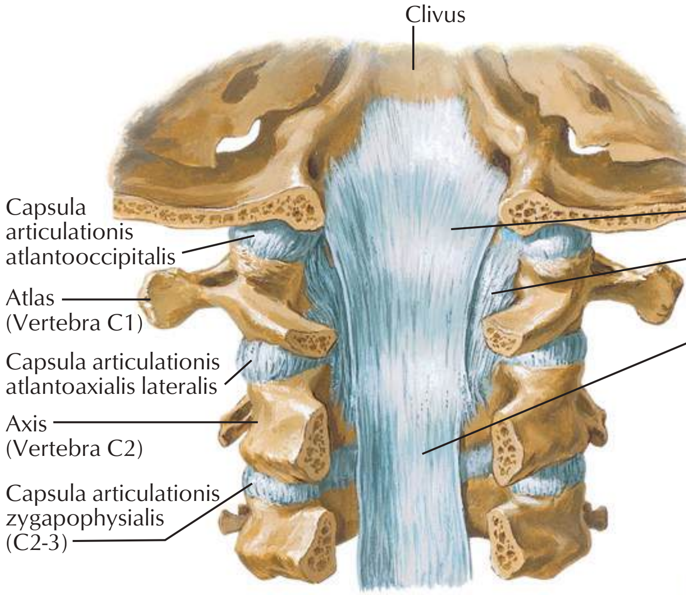
The uncovertebral joints of the cervical spine: anterior view (C3 to C7 have been sectioned coronally to expose the joints)

C. Machado M.D.

External Craniocervical Ligaments

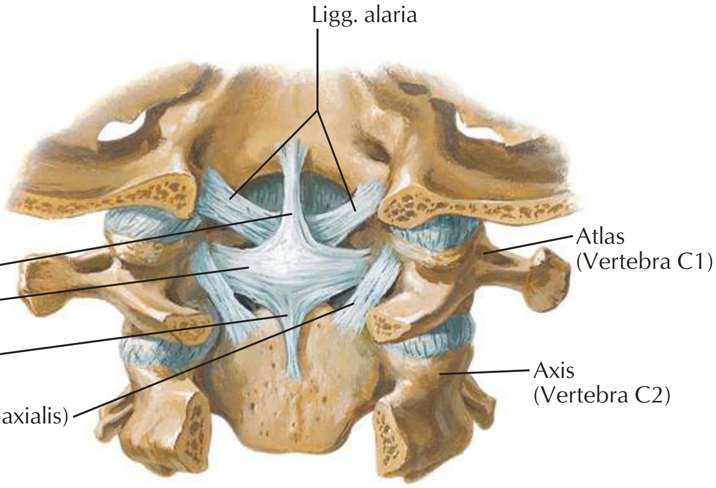

Anterior view
Pars basilaris ossis occipitalis
Tuberculum pharyngeum
Membrana atlantooccipitalis anterior
Capsula articulationis atlantooccipitalis
Membrana atlantooccipitalis posterior
Articulatio atlantoaxialis lateralis (exposed)
Lig. longitudinale anterius
Atlas (Vertebra C1)
Capsula articulationis atlantoaxialis lateralis
Axis (Vertebra C2)
Capsula articulationis zygapophysialis (C3-4)
Posterior view
Membrana atlantooccipitalis posterior
Os occipitale
Capsula articulationis atlantooccipitalis
Proc. transversus atlantis
Capsula articulationis atlantoaxialis lateralis
Axis (Vertebra C2)
Ligg. flava
N. suboccipitalis (R. posterior n. spinalis C1)
A. vertebralis
Membrana atlantooccipitalis anterior
Capsula articulationis atlantooccipitalis
Membrana atlantooccipitalis posterior
Ligg. flava
Lig. nuchae
Proc. spinosus vertebrae C7 (Vertebrae prominens)
Lig. supraspinale
Atlas (Vertebra C1)
Corpus axis
Disci intervertebrales (C2-3 and C3-4)
Articulationes zygapophysiales (C4–5 and C5–6)
Tuberculum anterius vertebrae C6 (Tuberculum caroticum)
A. vertebralis
Vertebra T1
Right lateral view
F. Netter M.D.

See also Plate 26



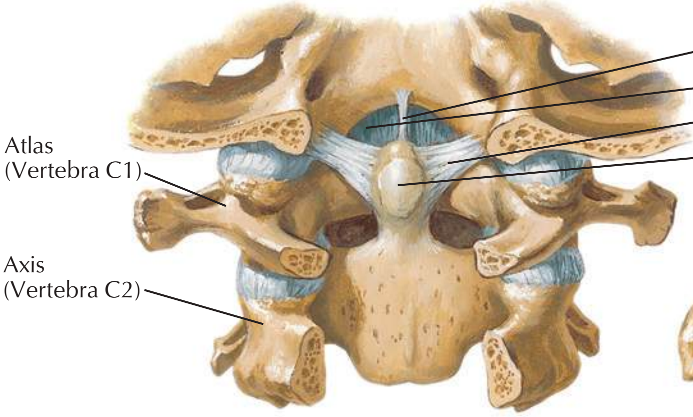
Upper part of canalis vertebralis with processus spinosi and parts of arcus vertebrarum removed to expose ligaments on facies posteriores corporum vertebralium: posterior view

Clivus
Capsula articulationis atlantooccipitalis
Atlas (Vertebra C1)
Capsula articulationis atlantoaxialis lateralis
Axis (Vertebra C2)
Capsula articulationis zygapophysialis (C2-3)
Membrana tectoria
Pars profunda membranae tectoriae (Lig. atlantoaxiale)
Lig. longitudinale posterius



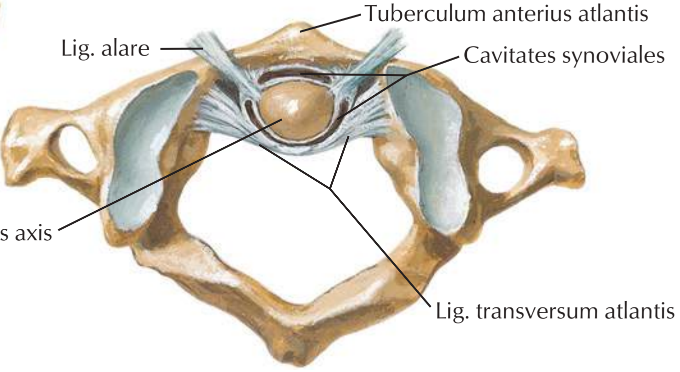
Ligg. alaria
Atlas (Vertebra C1)
Lig. cruciforme atlantis
Fasciculus longitudinalis superior
Lig. transversum atlantis
Fasciculus longitudinalis inferior
Axis (Vertebra C2)
Pars profunda membranae tectoriae (Lig. atlantoaxialis)

Principal part of membrana tectoria removed to expose deeper ligaments: posterior view



Lig. apicis dentis
Lig. atlantooccipitale anterius
Lig. alare
Facies articularis posterior dentis axis (for Lig. transversum atlantis)
Atlas (Vertebra C1)
Axis (Vertebra C2)

Lig. cruciforme atlantis removed to show deeper ligaments: posterior view



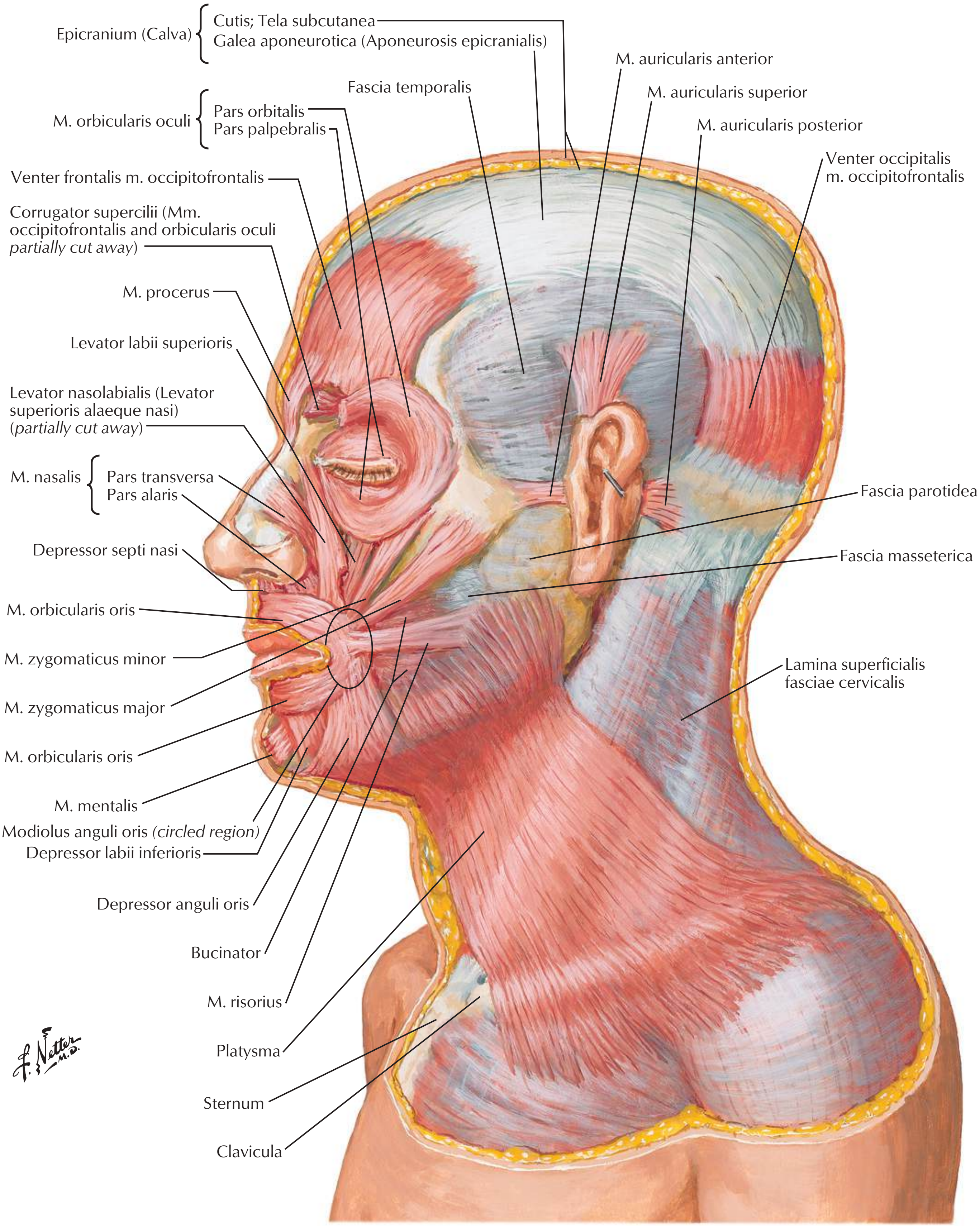
Tuberculum anterius atlantis
Lig. alare
Cavitates synoviales
Dens axis
Lig. transversum atlantis

Articulatio atlantoaxialis mediana: superior view

F. Netter M.D.

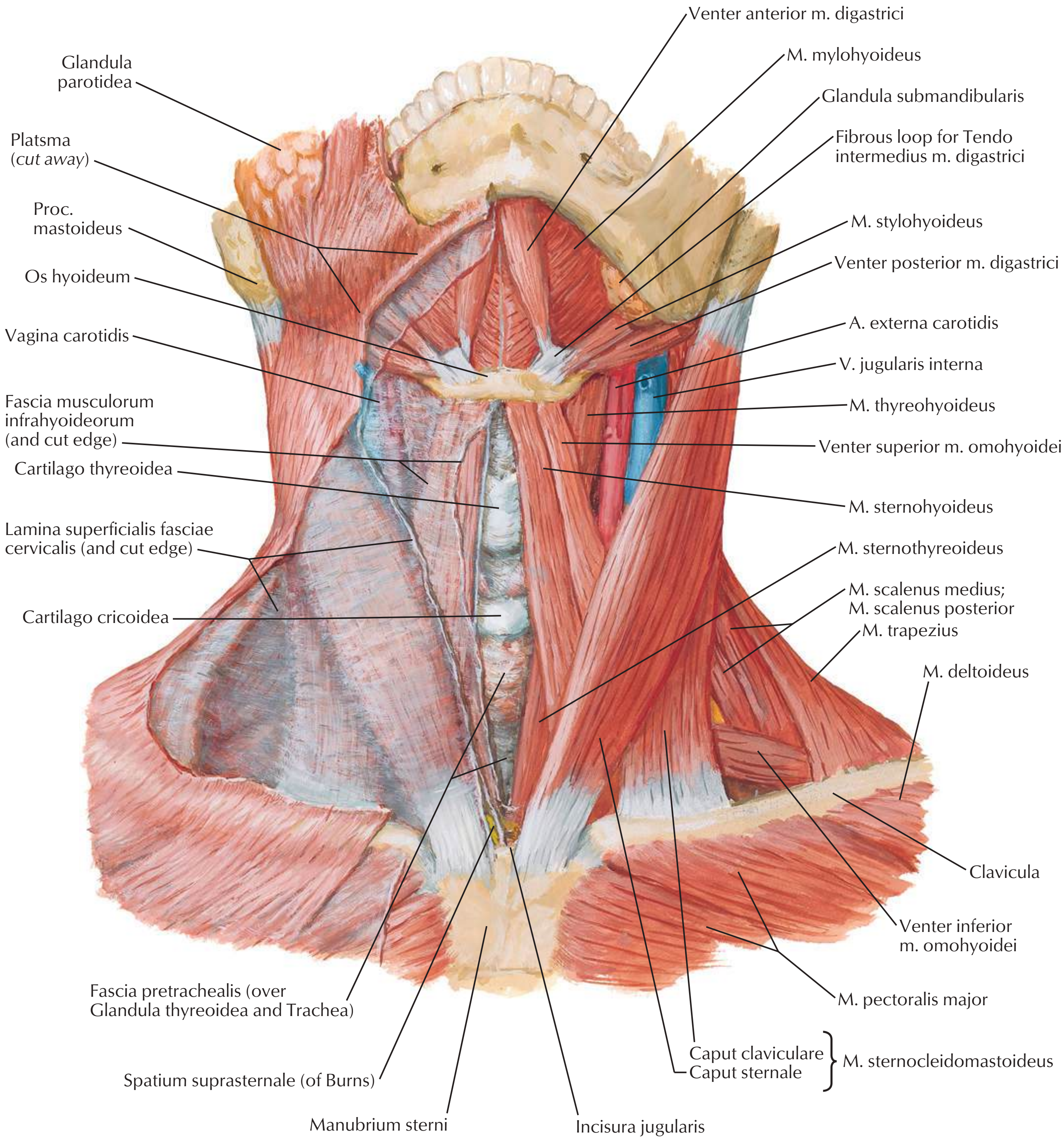
Muscles of Facial Expression: Lateral View

See also Plates 34, 55, 56

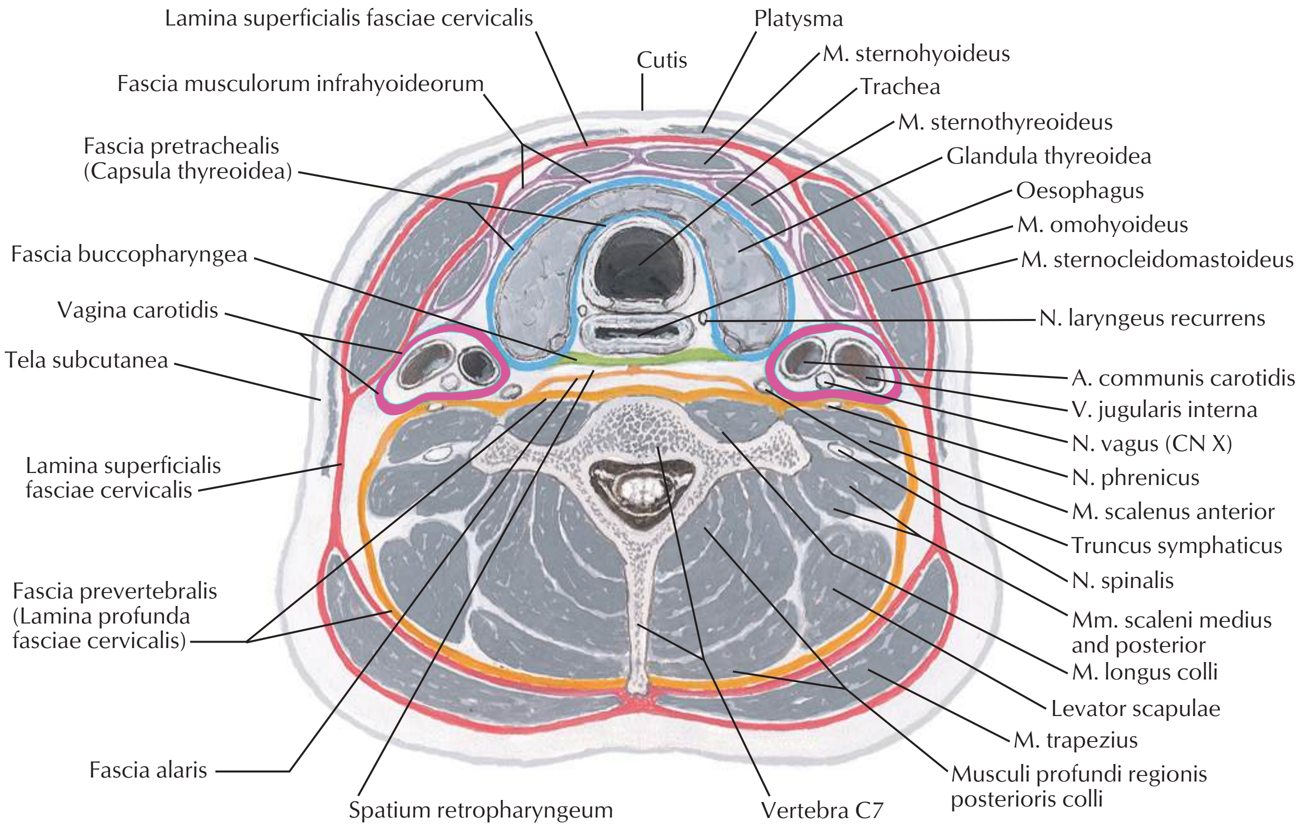

Epicranium (Calva)
Cutis; Tela subcutanea
Galea aponeurotica (Aponeurosis epicranialis)
M. auricularis anterior
Fascia temporalis
M. auricularis superior
M. orbicularis oculi
Pars orbitalis
Pars palpebralis
M. auricularis posterior
Venter frontalis m. occipitofrontalis
Venter occipitalis m. occipitofrontalis
Corrugator supercilii (Mm. occipitofrontalis and orbicularis oculi *partially cut away*)
M. procerus
Levator labii superioris
Levator nasolabialis (Levator superioris alaeque nasi) (*partially cut away*)
M. nasalis
Pars transversa
Pars alaris
Fascia parotidea
Depressor septi nasi
Fascia masseterica
M. orbicularis oris
M. zygomaticus minor
Lamina superficialis fasciae cervicalis
M. zygomaticus major
M. orbicularis oris
M. mentalis
Modiolus anguli oris *(circled region)*
Depressor labii inferioris
Depressor anguli oris
Bucinator
M. risorius
Platysma
Sternum
Clavicula

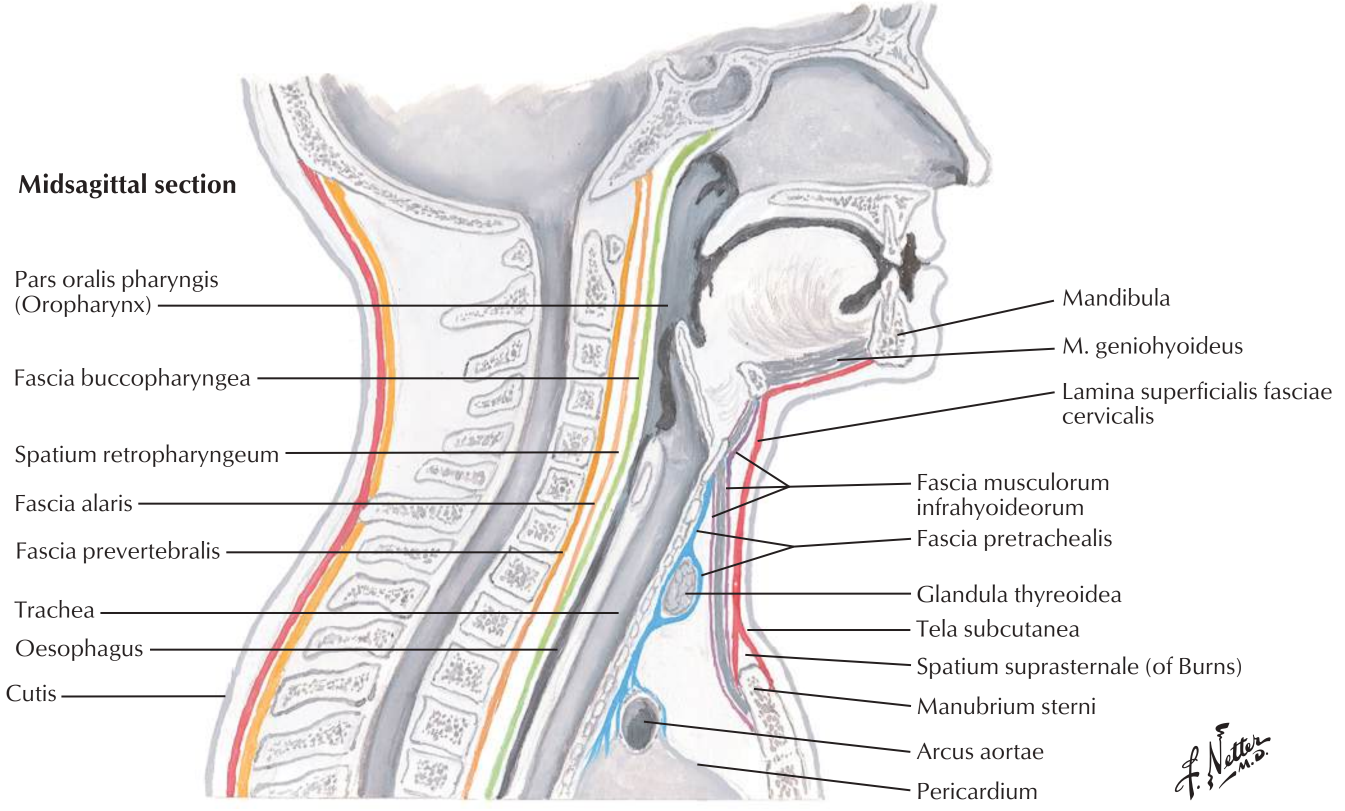
Muscles of Neck: Anterior View

See also Plates 33, 35, 38


Venter anterior m. digastrici
M. mylohyoideus
Glandula submandibularis
Fibrous loop for Tendo intermedius m. digastrici
M. stylohyoideus
Venter posterior m. digastrici
A. externa carotidis
V. jugularis interna
M. thyreohyoideus
Venter superior m. omohyoidei
M. sternohyoideus
M. sternothyreoideus
M. scalenus medius;
M. scalenus posterior
M. trapezius
M. deltoideus
Clavicula
Venter inferior m. omohyoidei
M. pectoralis major
Caput claviculare
Caput sternale
M. sternocleidomastoideus
Incisura jugularis
Manubrium sterni
Spatium suprasternale (of Burns)
Fascia pretrachealis (over Glandula thyreoidea and Trachea)
Cartilago cricoidea
Lamina superficialis fasciae cervicalis (and cut edge)
Cartilago thyreoidea
Fascia musculorum infrahyoideorum (and cut edge)
Vagina carotidis
Os hyoideum
Proc. mastoideus
Platsma (*cut away*)
Glandula parotidea

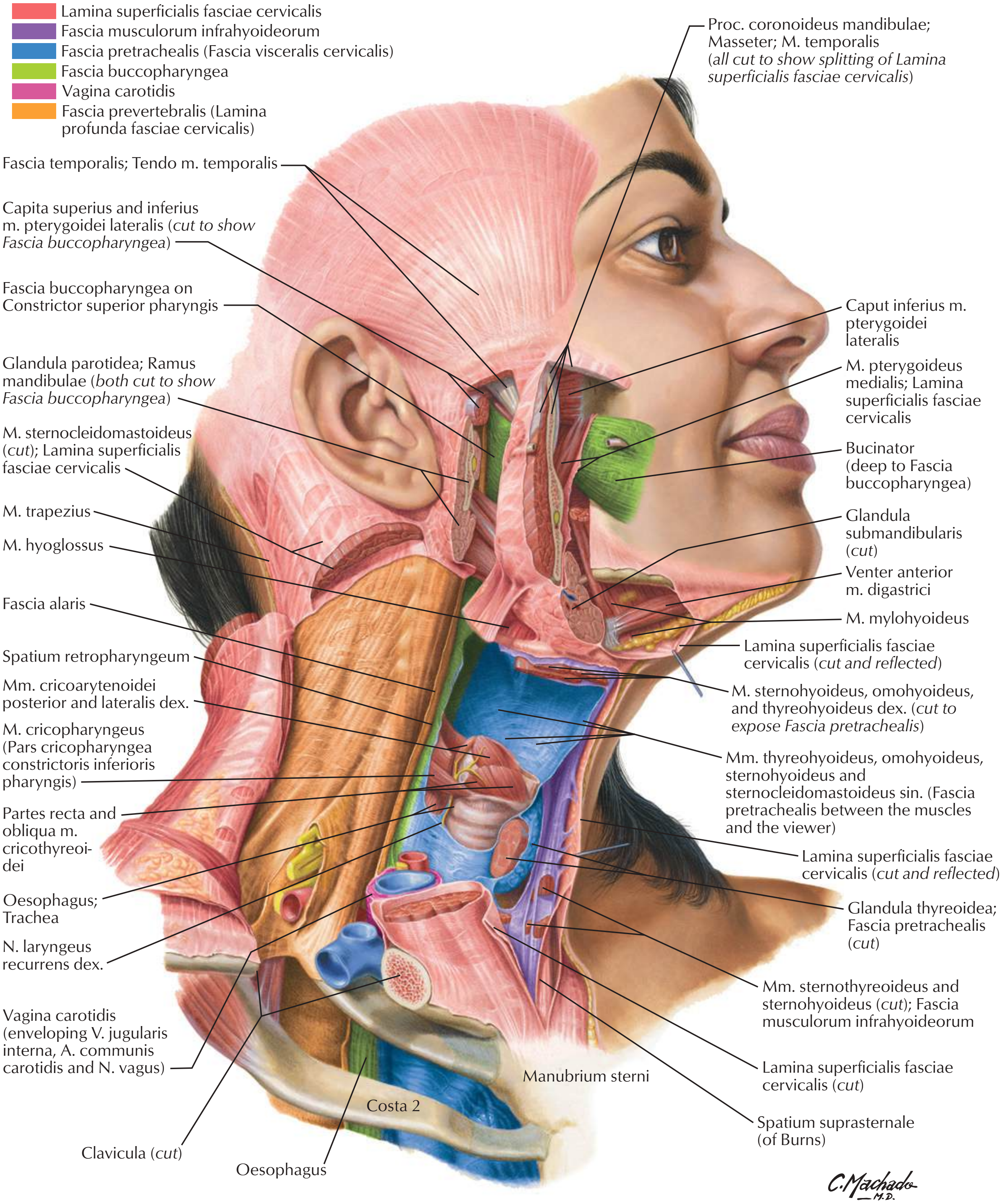
See also **Plate 32**


Cross section
Lamina superficialis fasciae cervicalis
Platysma
Cutis
M. sternohyoideus
Fascia musculorum infrahyoideorum
Trachea
M. sternothyreoideus
Fascia pretrachealis (Capsula thyreoidea)
Glandula thyreoidea
Oesophagus
M. omohyoideus
Fascia buccopharyngea
M. sternocleidomastoideus
Vagina carotidis
N. laryngeus recurrens
Tela subcutanea
A. communis carotidis
V. jugularis interna
N. vagus (CN X)
Lamina superficialis fasciae cervicalis
N. phrenicus
M. scalenus anterior
Truncus symphaticus
N. spinalis
Fascia prevertebralis (Lamina profunda fasciae cervicalis)
Mm. scaleni medius and posterior
M. longus colli
Levator scapulae
M. trapezius
Fascia alaris
Musculi profundi regionis posterioris colli
Spatium retropharyngeum
Vertebra C7


Midsagittal section
Pars oralis pharyngis (Oropharynx)
Mandibula
M. geniohyoideus
Fascia buccopharyngea
Lamina superficialis fasciae cervicalis
Spatium retropharyngeum
Fascia musculorum infrahyoideorum
Fascia alaris
Fascia pretrachealis
Fascia prevertebralis
Glandula thyreoidea
Trachea
Tela subcutanea
Oesophagus
Spatium suprasternale (of Burns)
Cutis
Manubrium sterni
Arcus aortae
Pericardium

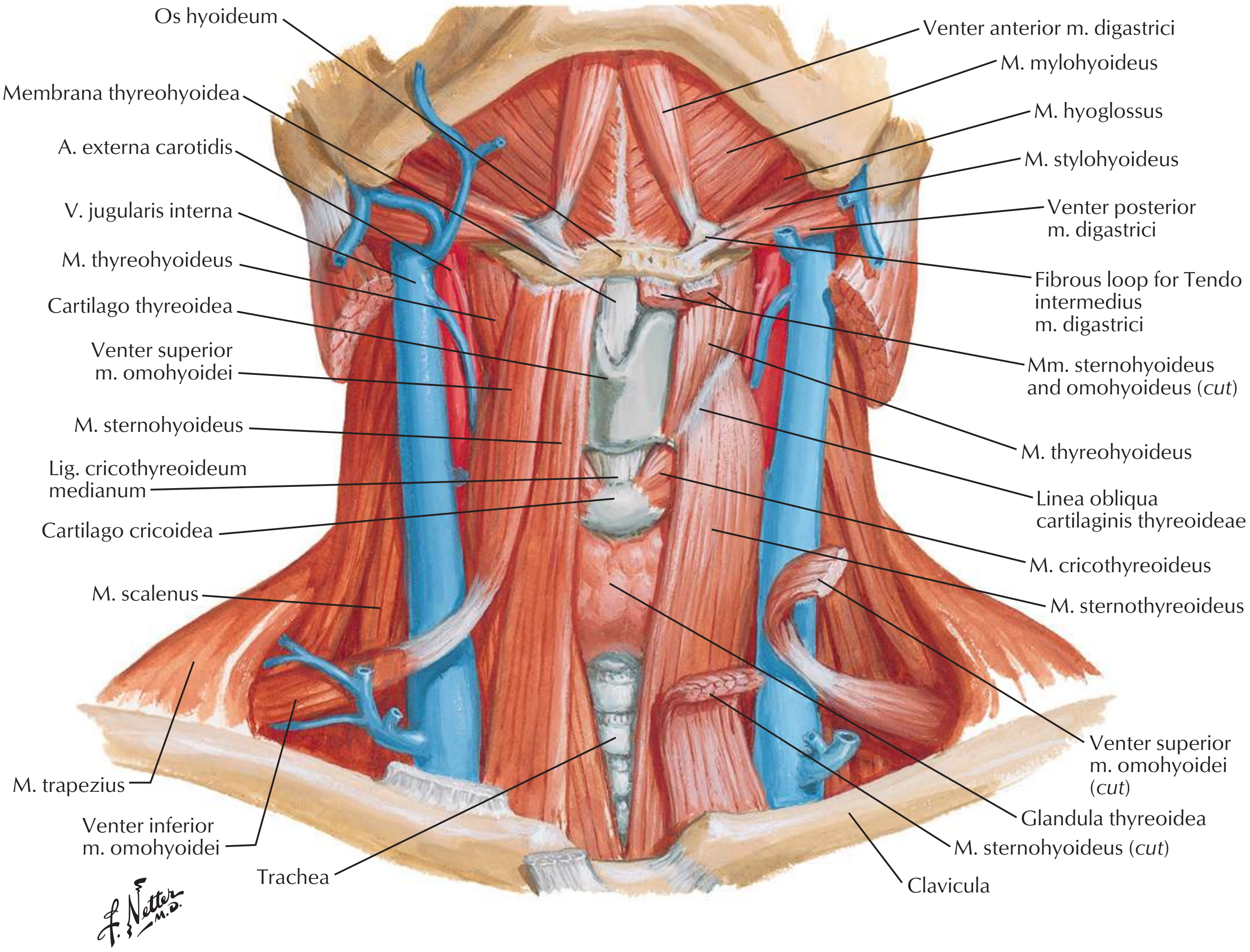
See also Plates 32, 33, 38

🟥 Lamina superficialis fasciae cervicalis
🟪 Fascia musculorum infrahyoideorum
🟦 Fascia pretrachealis (Fascia visceralis cervicalis)
🟩 Fascia buccopharyngea
▨ Vagina carotidis
🟧 Fascia prevertebralis (Lamina profunda fasciae cervicalis)


Fascia temporalis; Tendo m. temporalis
Capita superius and inferius m. pterygoidei lateralis (*cut to show Fascia buccopharyngea*)
Fascia buccopharyngea on Constrictor superior pharyngis
Glandula parotidea; Ramus mandibulae (*both cut to show Fascia buccopharyngea*)
M. sternocleidomastoideus (*cut*); Lamina superficialis fasciae cervicalis
M. trapezius
M. hyoglossus
Fascia alaris
Spatium retropharyngeum
Mm. cricoarytenoidei posterior and lateralis dex.
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
Partes recta and obliqua m. cricothyreoidei
Oesophagus; Trachea
N. laryngeus recurrens dex.
Vagina carotidis (enveloping V. jugularis interna, A. communis carotidis and N. vagus)
Clavicula (*cut*)
Oesophagus
Costa 2
Manubrium sterni
Proc. coronoideus mandibulae; Masseter; M. temporalis (*all cut to show splitting of Lamina superficialis fasciae cervicalis*)
Caput inferius m. pterygoidei lateralis
M. pterygoideus medialis; Lamina superficialis fasciae cervicalis
Bucinator (deep to Fascia buccopharyngea)
Glandula submandibularis (*cut*)
Venter anterior m. digastrici
M. mylohyoideus
Lamina superficialis fasciae cervicalis (*cut and reflected*)
M. sternohyoideus, omohyoideus, and thyreohyoideus dex. (*cut to expose Fascia pretrachealis*)
Mm. thyreohyoideus, omohyoideus, sternohyoideus and sternocleidomastoideus sin. (Fascia pretrachealis between the muscles and the viewer)
Lamina superficialis fasciae cervicalis (*cut and reflected*)
Glandula thyreoidea; Fascia pretrachealis (*cut*)
Mm. sternothyreoideus and sternohyoideus (*cut*); Fascia musculorum infrahyoideorum
Lamina superficialis fasciae cervicalis (*cut*)
Spatium suprasternale (of Burns)
C.Machado M.D.

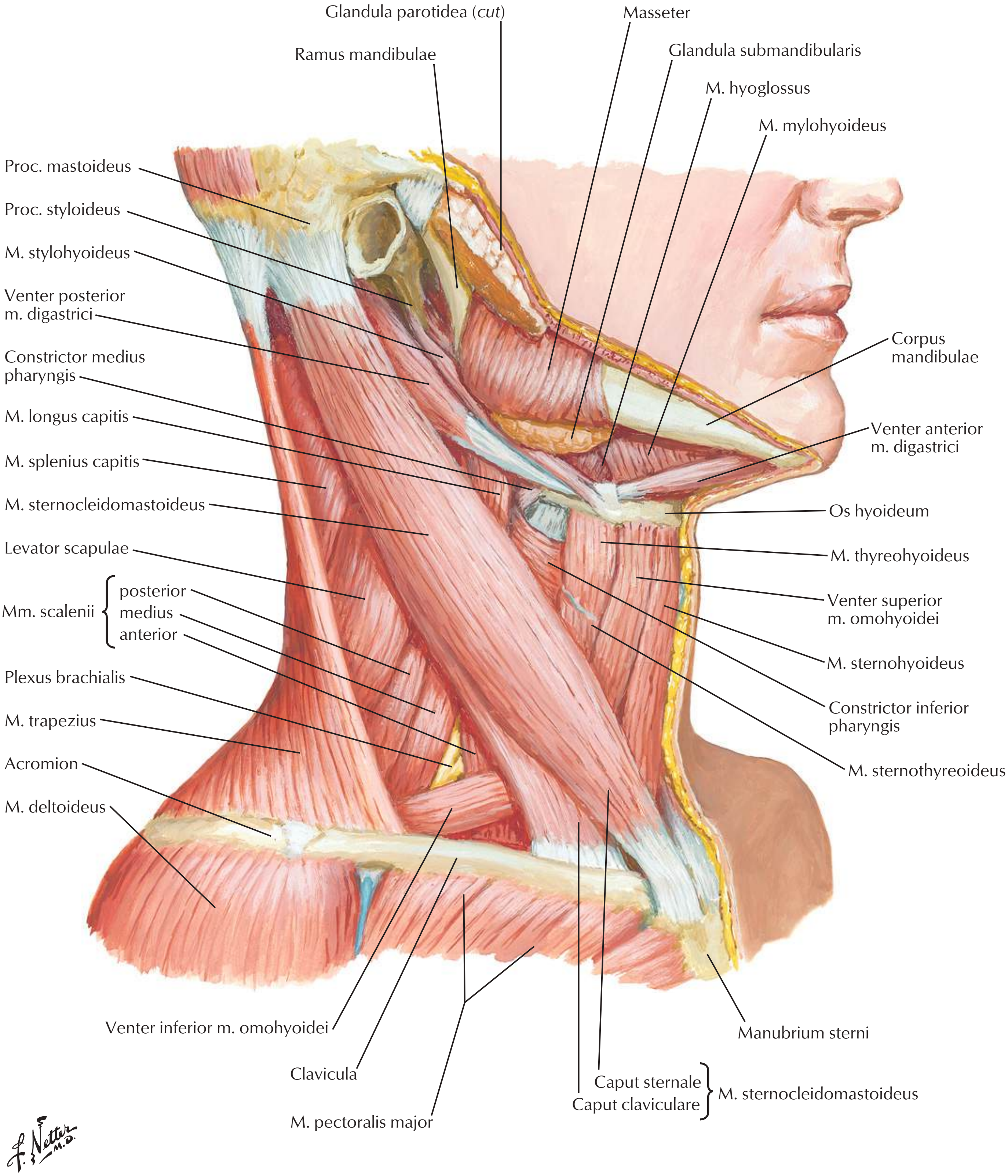
Infrahyoid and Suprahyoid Muscles

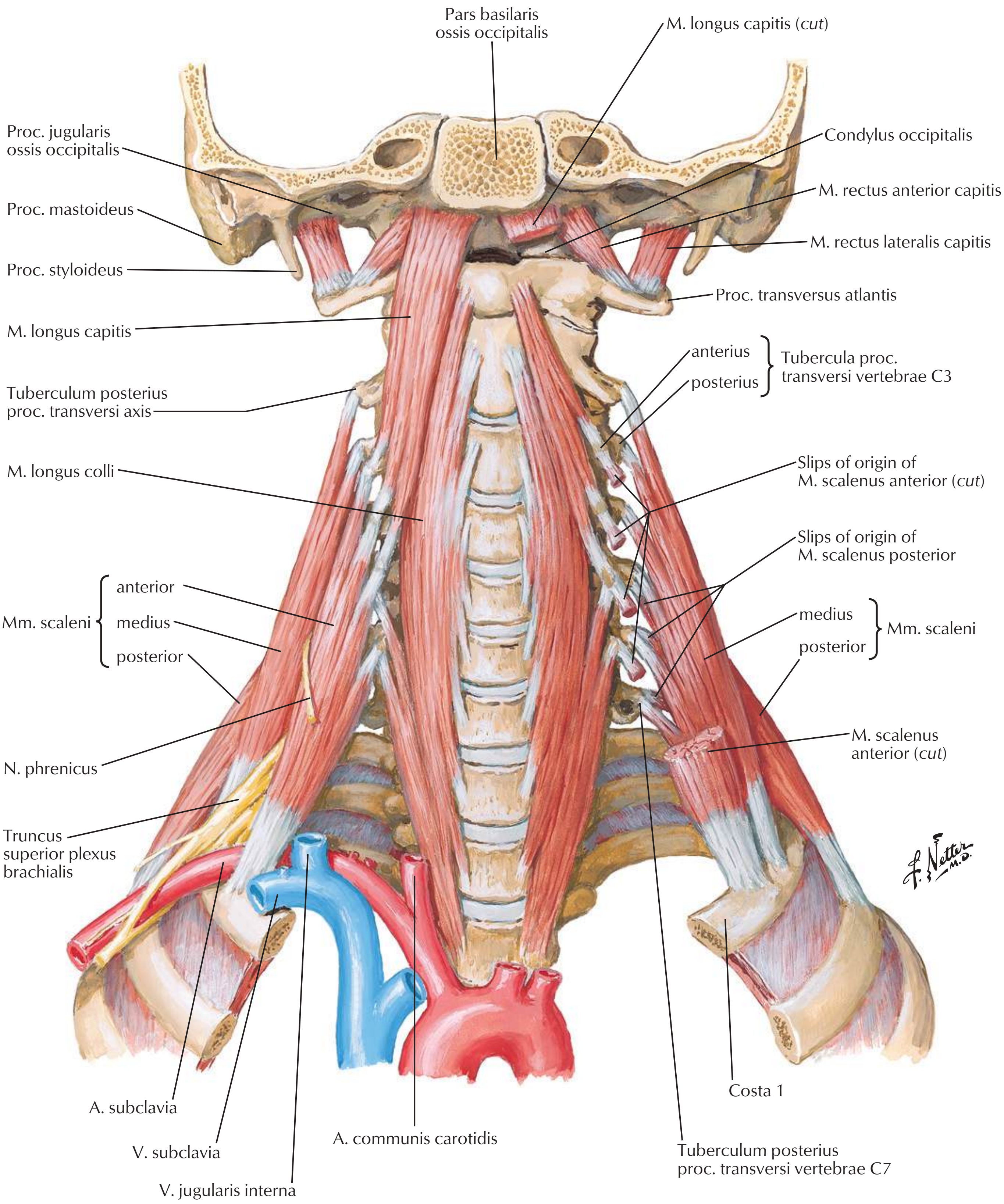
See also Plates 32, 36, 69


Os hyoideum
Membrana thyreohyoidea
A. externa carotidis
V. jugularis interna
M. thyreohyoideus
Cartilago thyreoidea
Venter superior m. omohyoidei
M. sternohyoideus
Lig. cricothyreoideum medianum
Cartilago cricoidea
M. scalenus
M. trapezius
Venter inferior m. omohyoidei
Trachea
Venter anterior m. digastrici
M. mylohyoideus
M. hyoglossus
M. stylohyoideus
Venter posterior m. digastrici
Fibrous loop for Tendo intermedius m. digastrici
Mm. sternohyoideus and omohyoideus (cut)
M. thyreohyoideus
Linea obliqua cartilaginis thyreoideae
M. cricothyreoideus
M. sternothyreoideus
Venter superior m. omohyoidei (cut)
Glandula thyreoidea
M. sternohyoideus (cut)
Clavicula

Muscles of Neck: Lateral View

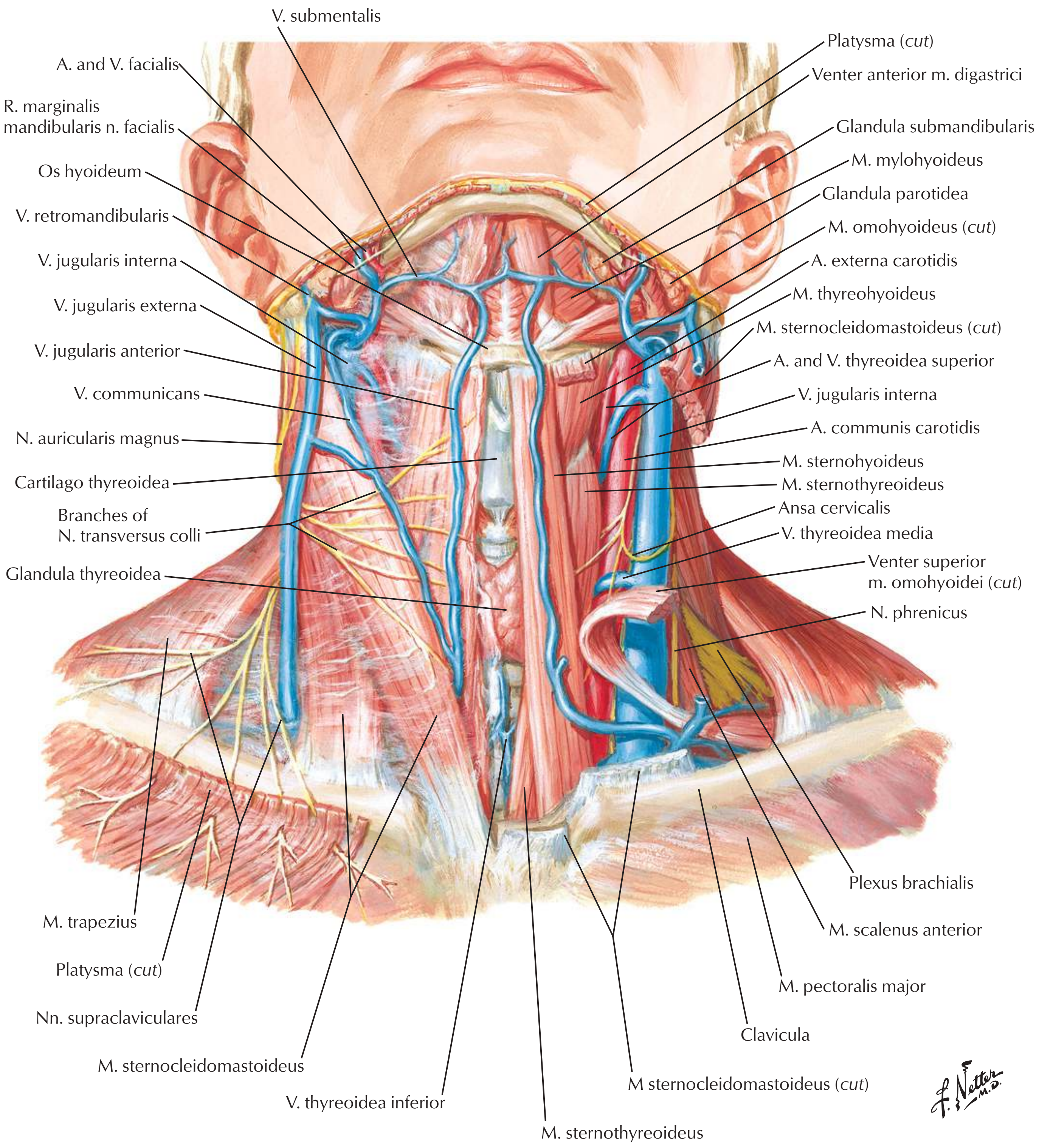
See also Plates 32, 35, 38


Glandula parotidea (*cut*)
Masseter
Ramus mandibulae
Glandula submandibularis
M. hyoglossus
M. mylohyoideus
Proc. mastoideus
Proc. styloideus
M. stylohyoideus
Venter posterior m. digastrici
Constrictor medius pharyngis
M. longus capitis
M. splenius capitis
M. sternocleidomastoideus
Levator scapulae
Mm. scalenii posterior
medius
anterior
Plexus brachialis
M. trapezius
Acromion
M. deltoideus
Corpus mandibulae
Venter anterior m. digastrici
Os hyoideum
M. thyreohyoideus
Venter superior m. omohyoidei
M. sternohyoideus
Constrictor inferior pharyngis
M. sternothyreoideus
Venter inferior m. omohyoidei
Clavicula
M. pectoralis major
Manubrium sterni
Caput sternale
Caput claviculare
M. sternocleidomastoideus
F. Netter M.D.

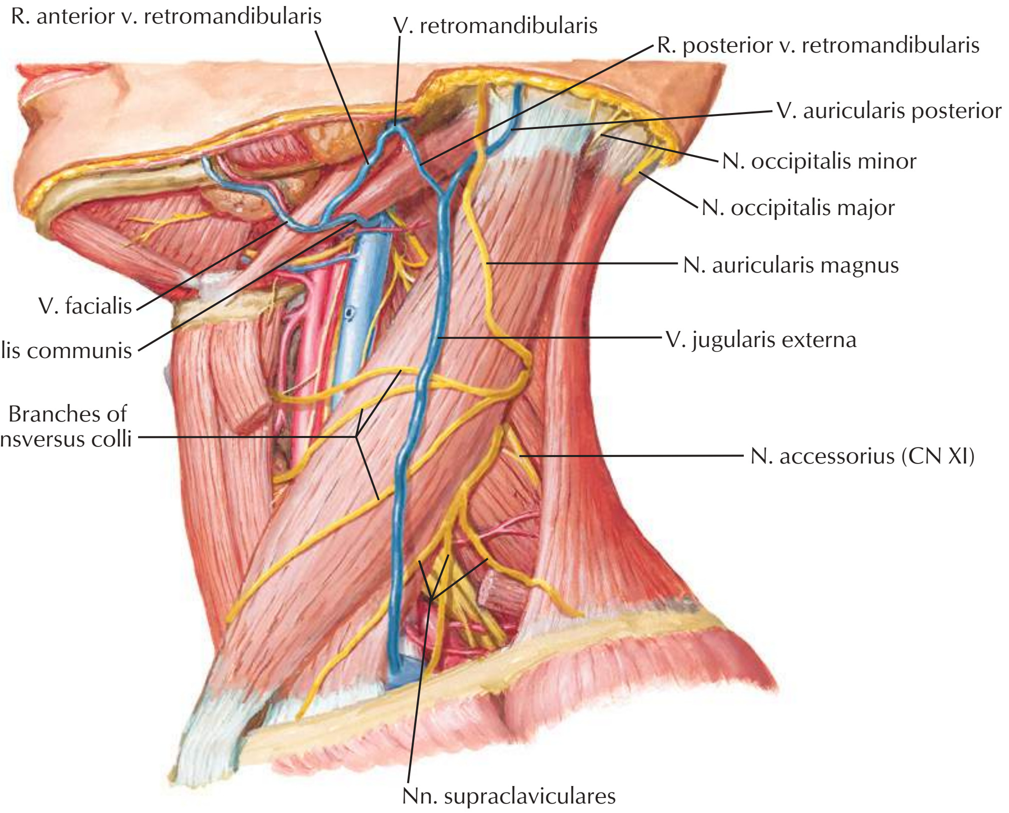

Pars basilaris
ossis occipitalis
M. longus capitis (*cut*)
Proc. jugularis
ossis occipitalis
Condylus occipitalis
M. rectus anterior capitis
Proc. mastoideus
M. rectus lateralis capitis
Proc. styloideus
Proc. transversus atlantis
M. longus capitis
anterius
posterius
Tubercula proc.
transversi vertebrae C3
Tuberculum posterius
proc. transversi axis
Slips of origin of
M. scalenus anterior (*cut*)
M. longus colli
Slips of origin of
M. scalenus posterior
anterior
Mm. scaleni
medius
posterior
medius
Mm. scaleni
posterior
M. scalenus
anterior (*cut*)
N. phrenicus
Truncus
superior plexus
brachialis
Costa 1
A. subclavia
A. communis carotidis
V. subclavia
Tuberculum posterius
proc. transversi vertebrae C7
V. jugularis interna

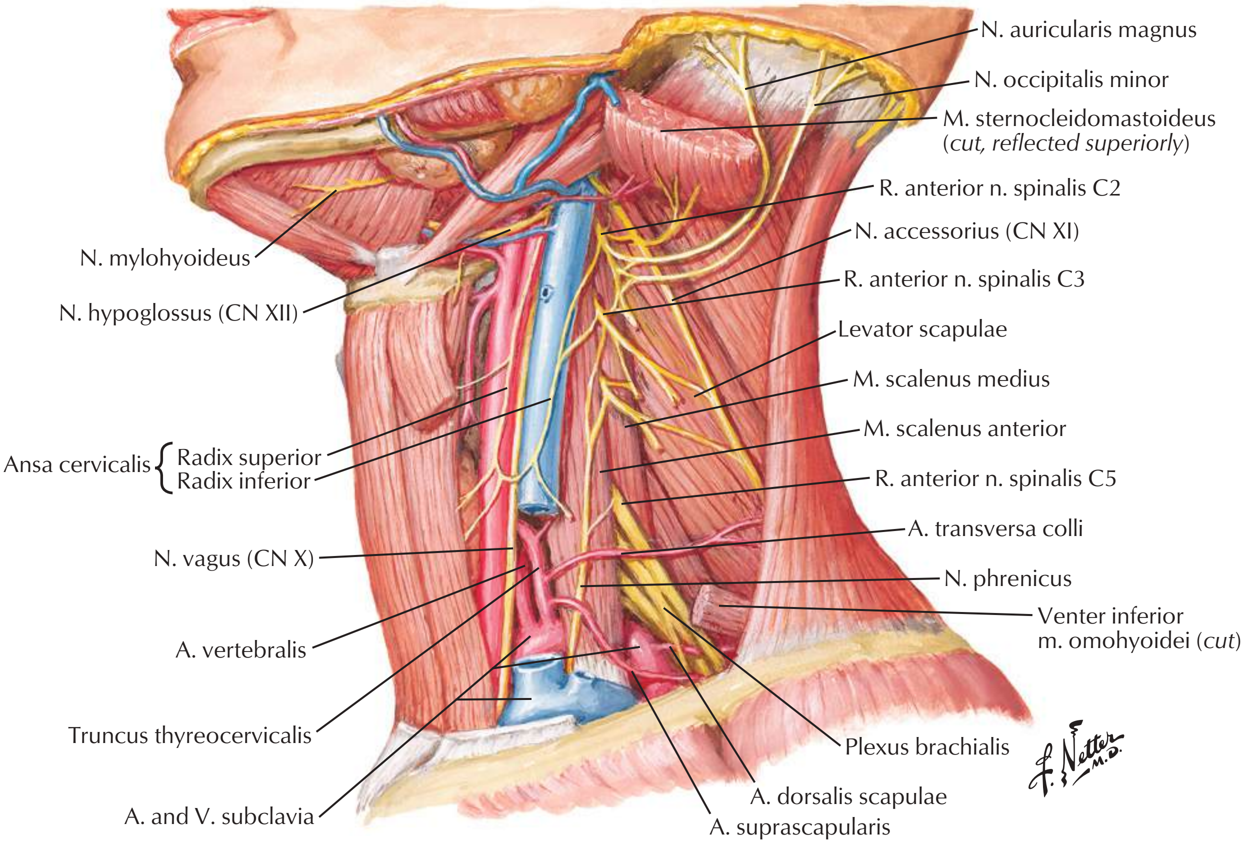
Superficial Veins and Cutaneous Nerves of Neck

For deep veins of neck see Plate 84

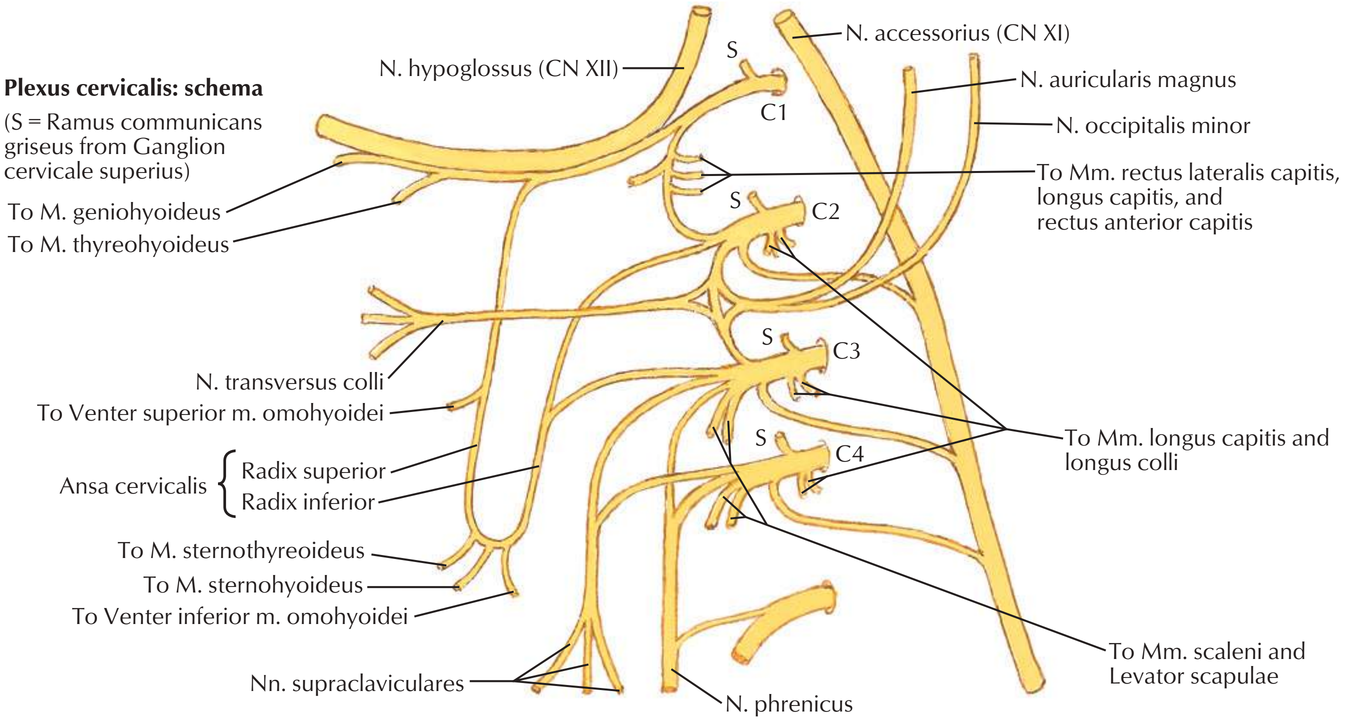

V. submentalis
A. and V. facialis
R. marginalis mandibularis n. facialis
Os hyoideum
V. retromandibularis
V. jugularis interna
V. jugularis externa
V. jugularis anterior
V. communicans
N. auricularis magnus
Cartilago thyreoidea
Branches of N. transversus colli
Glandula thyreoidea
M. trapezius
Platysma (*cut*)
Nn. supraclaviculares
M. sternocleidomastoideus
V. thyreoidea inferior
M. sternothyreoideus
M sternocleidomastoideus (*cut*)
Clavicula
M. pectoralis major
M. scalenus anterior
Plexus brachialis
Platysma (*cut*)
Venter anterior m. digastrici
Glandula submandibularis
M. mylohyoideus
Glandula parotidea
M. omohyoideus (*cut*)
A. externa carotidis
M. thyreohyoideus
M. sternocleidomastoideus (*cut*)
A. and V. thyreoidea superior
V. jugularis interna
A. communis carotidis
M. sternohyoideus
M. sternothyreoideus
Ansa cervicalis
V. thyreoidea media
Venter superior m. omohyoidei (*cut*)
N. phrenicus

See also Plates 138, 139, 140


R. anterior v. retromandibularis
V. retromandibularis
R. posterior v. retromandibularis
V. auricularis posterior
N. occipitalis minor
N. occipitalis major
N. auricularis magnus
V. facialis
V. facialis communis
V. jugularis externa
Branches of
N. transversus colli
N. accessorius (CN XI)
Nn. supraclaviculares


N. auricularis magnus
N. occipitalis minor
M. sternocleidomastoideus
(cut, reflected superiorly)
R. anterior n. spinalis C2
N. mylohyoideus
N. accessorius (CN XI)
R. anterior n. spinalis C3
N. hypoglossus (CN XII)
Levator scapulae
M. scalenus medius
M. scalenus anterior
Ansa cervicalis
Radix superior
Radix inferior
R. anterior n. spinalis C5
A. transversa colli
N. vagus (CN X)
N. phrenicus
Venter inferior
m. omohyoidei (cut)
A. vertebralis
Truncus thyreocervicalis
Plexus brachialis
A. and V. subclavia
A. dorsalis scapulae
A. suprascapularis

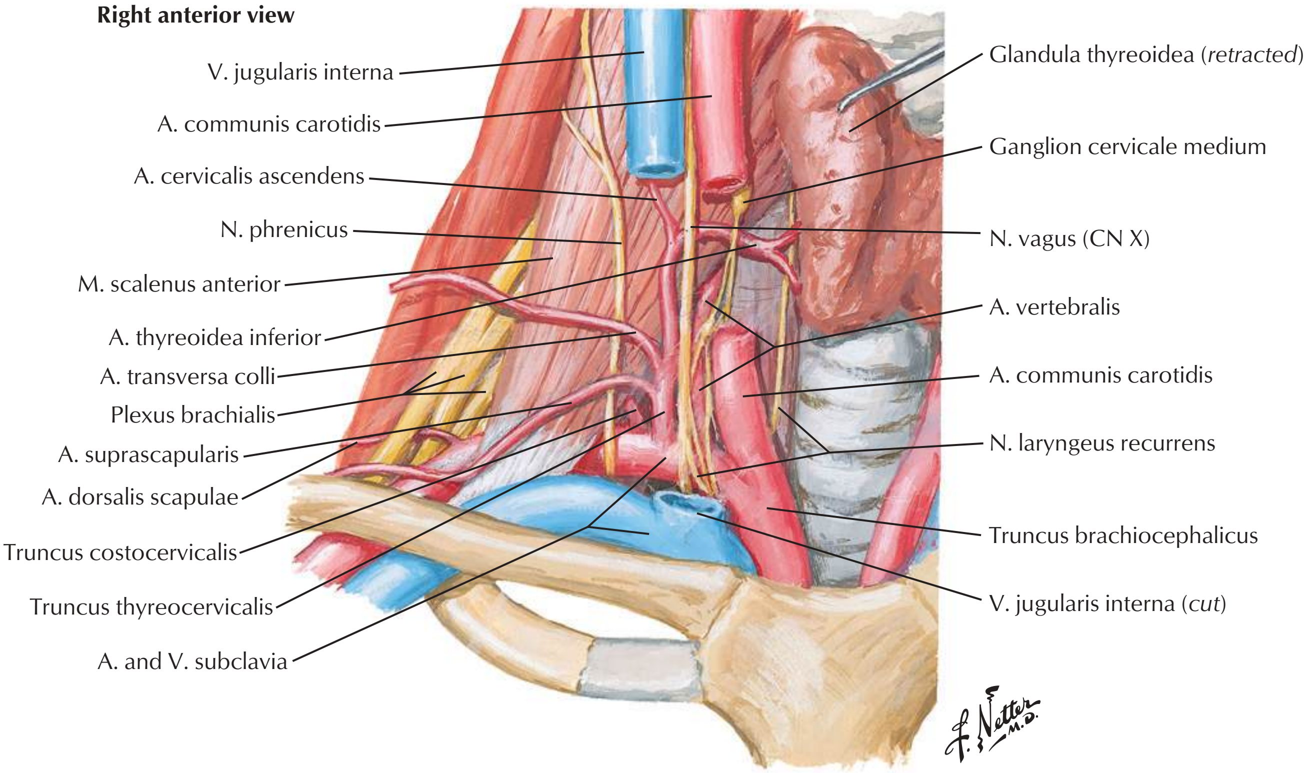
See also Plate 140



Plexus cervicalis: schema

(S = Ramus communicans griseus from Ganglion cervicale superius)

N. hypoglossus (CN XII)
S
N. accessorius (CN XI)
N. auricularis magnus
C1
N. occipitalis minor
To M. geniohyoideus
To M. thyreohyoideus
To Mm. rectus lateralis capitis, longus capitis, and rectus anterior capitis
S
C2
S
C3
N. transversus colli
To Venter superior m. omohyoidei
S
C4
To Mm. longus capitis and longus colli
Ansa cervicalis
Radix superior
Radix inferior
To M. sternothyreoideus
To M. sternohyoideus
To Venter inferior m. omohyoidei
To Mm. scaleni and Levator scapulae
Nn. supraclaviculares
N. phrenicus

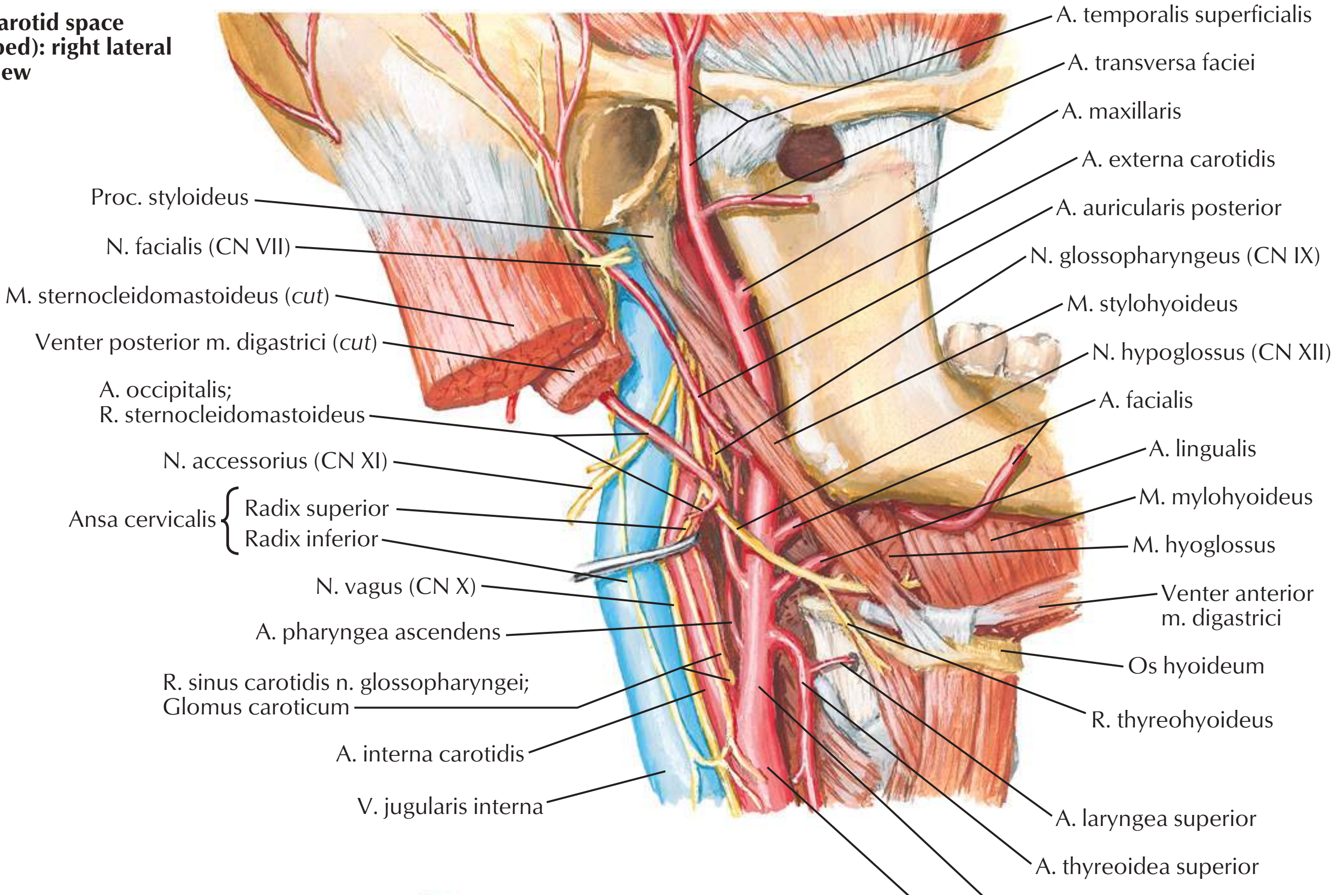


Right anterior view

V. jugularis interna
A. communis carotidis
A. cervicalis ascendens
N. phrenicus
M. scalenus anterior
A. thyreoidea inferior
A. transversa colli
Plexus brachialis
A. suprascapularis
A. dorsalis scapulae
Truncus costocervicalis
Truncus thyreocervicalis
A. and V. subclavia
Glandula thyreoidea (retracted)
Ganglion cervicale medium
N. vagus (CN X)
A. vertebralis
A. communis carotidis
N. laryngeus recurrens
Truncus brachiocephalicus
V. jugularis interna (cut)

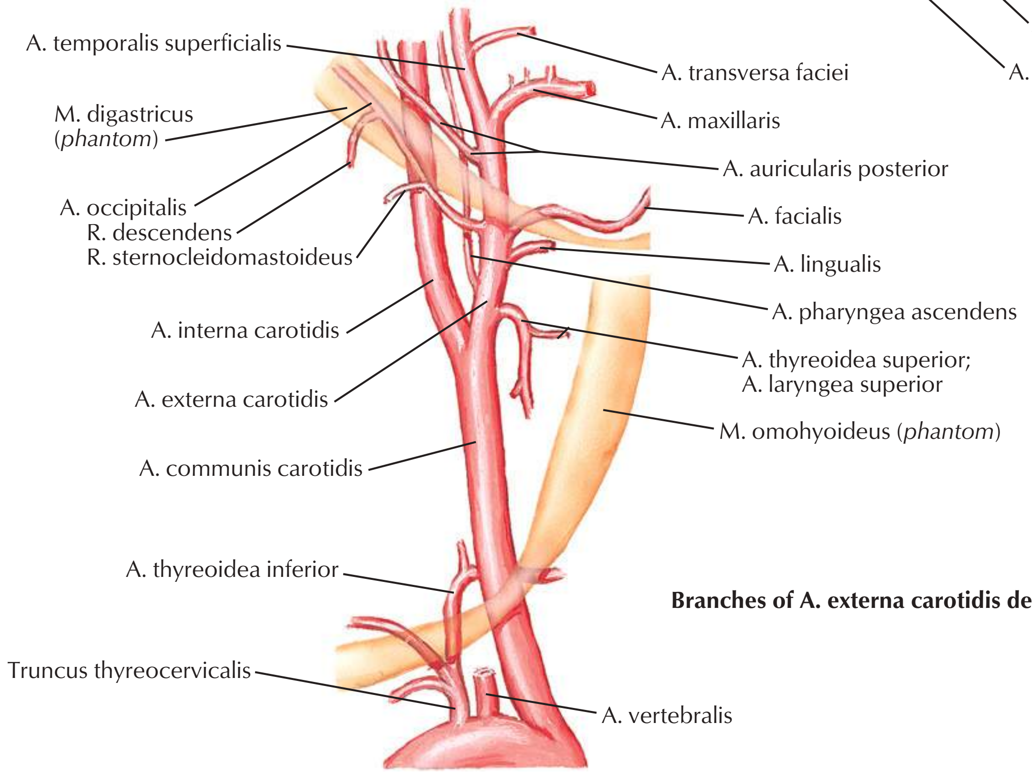
Carotid Arteries

See also Plates 147, 149



Parotid space (bed): right lateral view

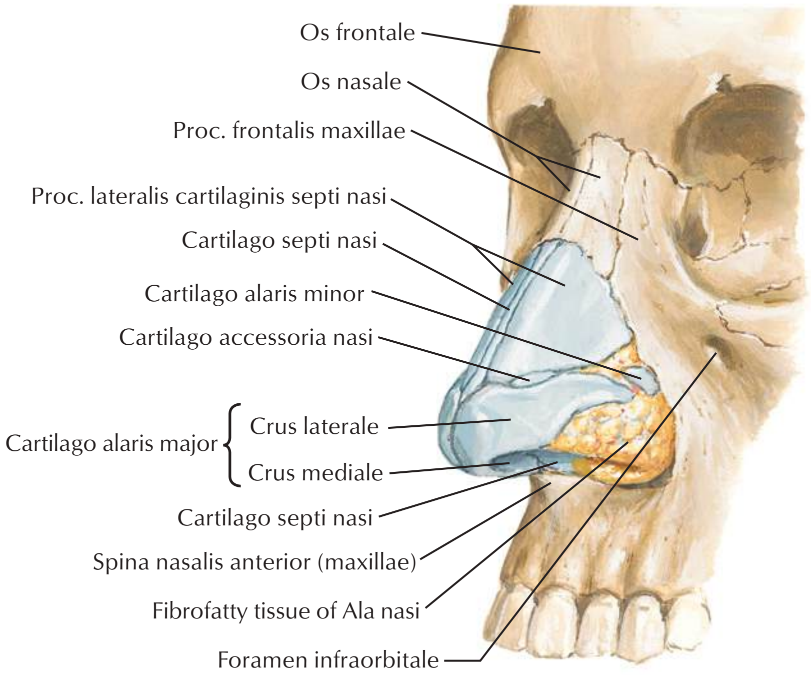
Proc. styloideus
N. facialis (CN VII)
M. sternocleidomastoideus (*cut*)
Venter posterior m. digastrici (*cut*)
A. occipitalis;
R. sternocleidomastoideus
N. accessorius (CN XI)
Ansa cervicalis
Radix superior
Radix inferior
N. vagus (CN X)
A. pharyngea ascendens
R. sinus carotidis n. glossopharyngei;
Glomus caroticum
A. interna carotidis
V. jugularis interna
A. temporalis superficialis
A. transversa faciei
A. maxillaris
A. externa carotidis
A. auricularis posterior
N. glossopharyngeus (CN IX)
M. stylohyoideus
N. hypoglossus (CN XII)
A. facialis
A. lingualis
M. mylohyoideus
M. hyoglossus
Venter anterior
m. digastrici
Os hyoideum
R. thyreohyoideus
A. laryngea superior
A. thyreoidea superior
A. externa carotidis
A. communis carotidis



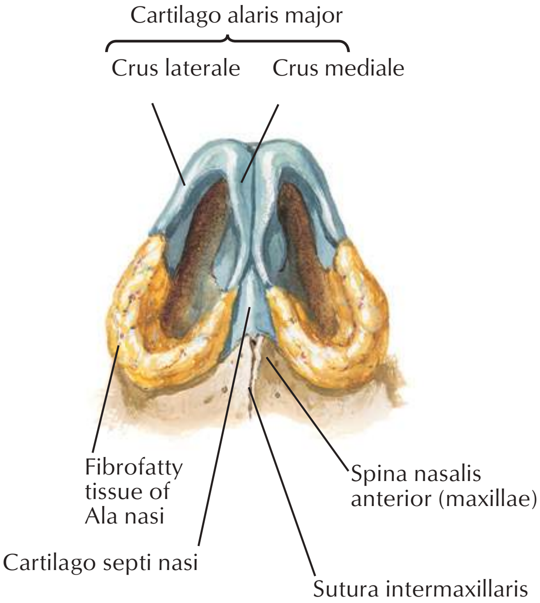
A. temporalis superficialis
M. digastricus
(*phantom*)
A. occipitalis
R. descendens
R. sternocleidomastoideus
A. interna carotidis
A. externa carotidis
A. communis carotidis
A. thyreoidea inferior
Truncus thyreocervicalis
A. transversa faciei
A. maxillaris
A. auricularis posterior
A. facialis
A. lingualis
A. pharyngea ascendens
A. thyreoidea superior;
A. laryngea superior
M. omohyoideus (*phantom*)
A. vertebralis

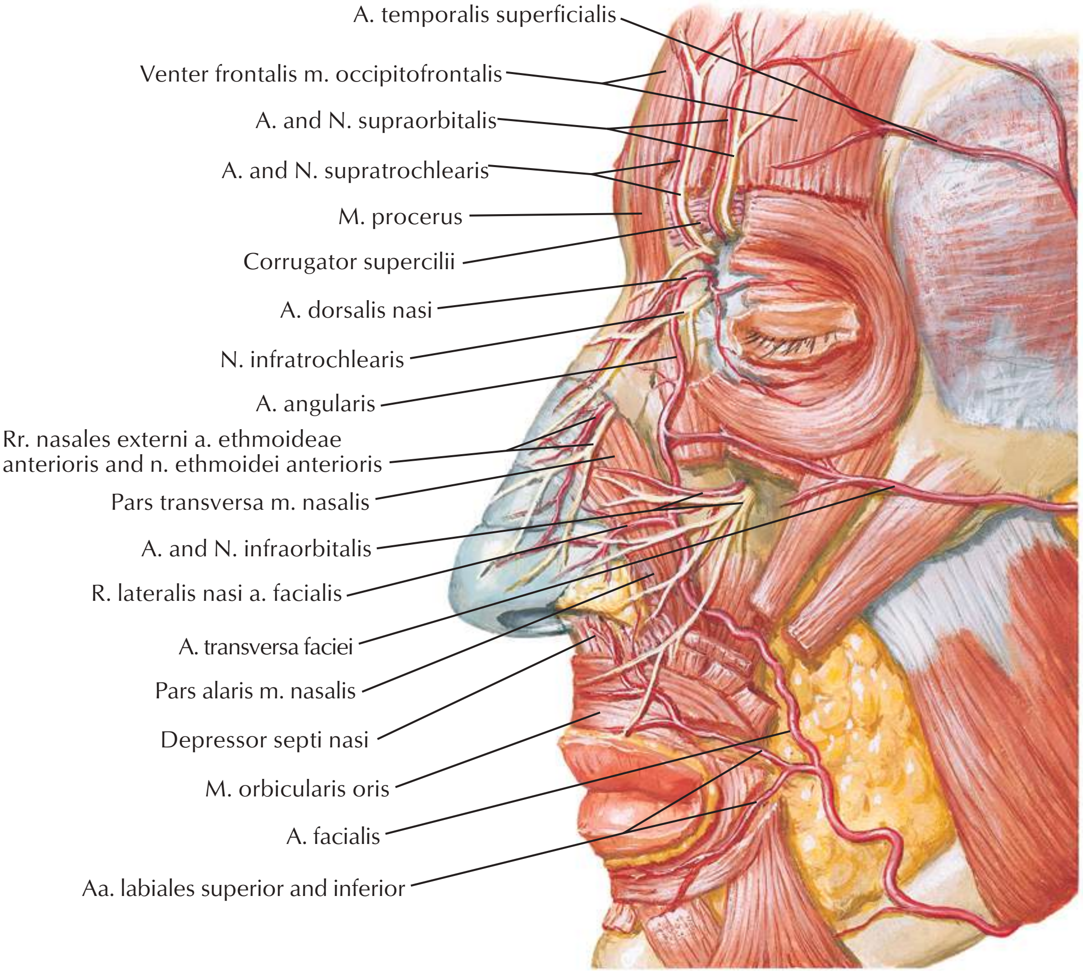
Branches of A. externa carotidis dex.: schema

Anterolateral view

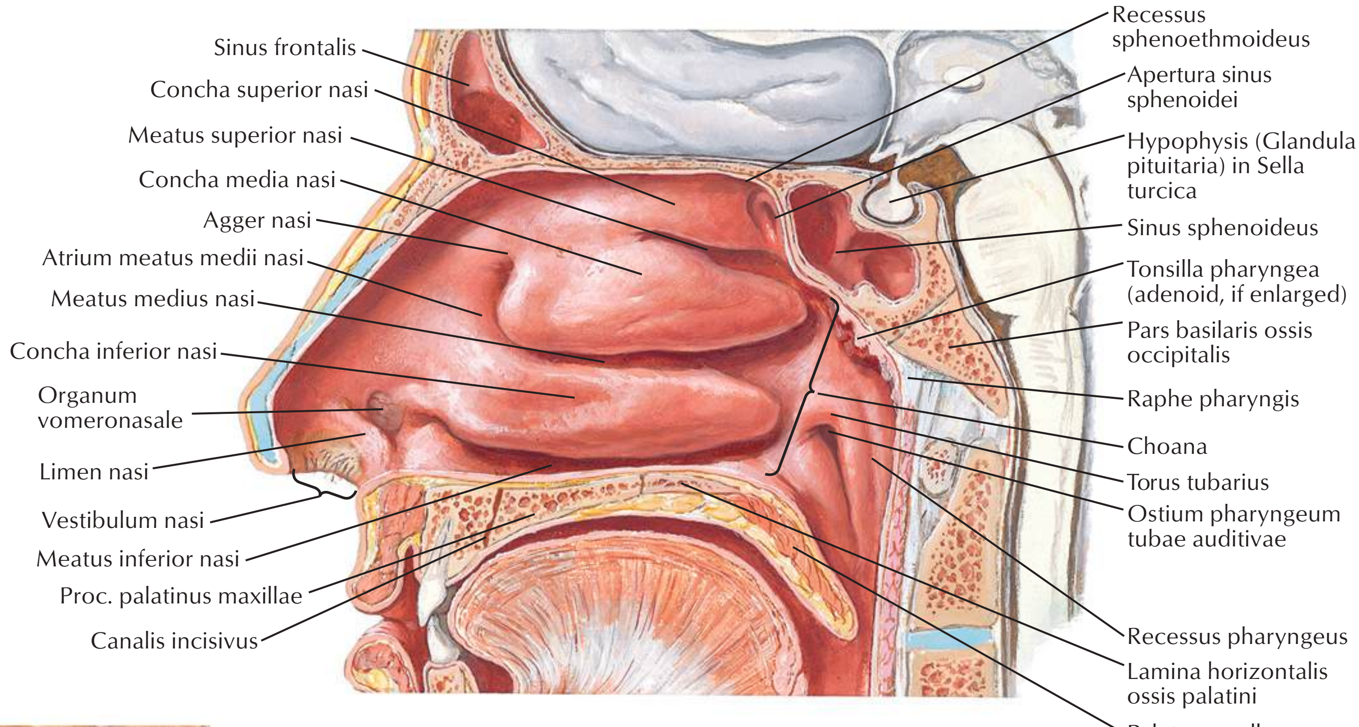

Os frontale
Os nasale
Proc. frontalis maxillae
Proc. lateralis cartilaginis septi nasi
Cartilago septi nasi
Cartilago alaris minor
Cartilago accessoria nasi
Cartilago alaris major
Crus laterale
Crus mediale
Cartilago septi nasi
Spina nasalis anterior (maxillae)
Fibrofatty tissue of Ala nasi
Foramen infraorbitale

Inferior view

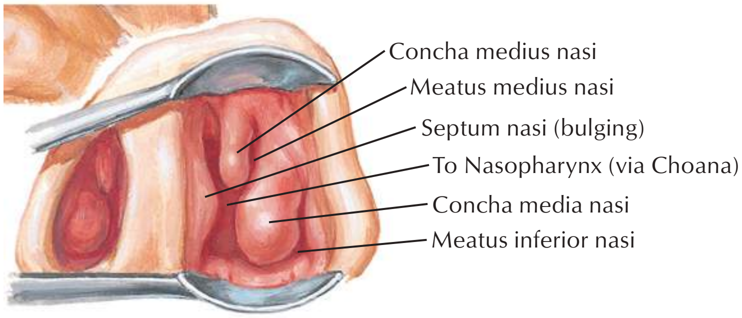

Cartilago alaris major
Crus laterale
Crus mediale
Fibrofatty tissue of Ala nasi
Cartilago septi nasi
Spina nasalis anterior (maxillae)
Sutura intermaxillaris


A. temporalis superficialis
Venter frontalis m. occipitofrontalis
A. and N. supraorbitalis
A. and N. supratrochlearis
M. procerus
Corrugator supercilii
A. dorsalis nasi
N. infratrochlearis
A. angularis
Rr. nasales externi a. ethmoideae anterioris and n. ethmoidei anterioris
Pars transversa m. nasalis
A. and N. infraorbitalis
R. lateralis nasi a. facialis
A. transversa faciei
Pars alaris m. nasalis
Depressor septi nasi
M. orbicularis oris
A. facialis
Aa. labiales superior and inferior

Lateral Wall of Nasal Cavity

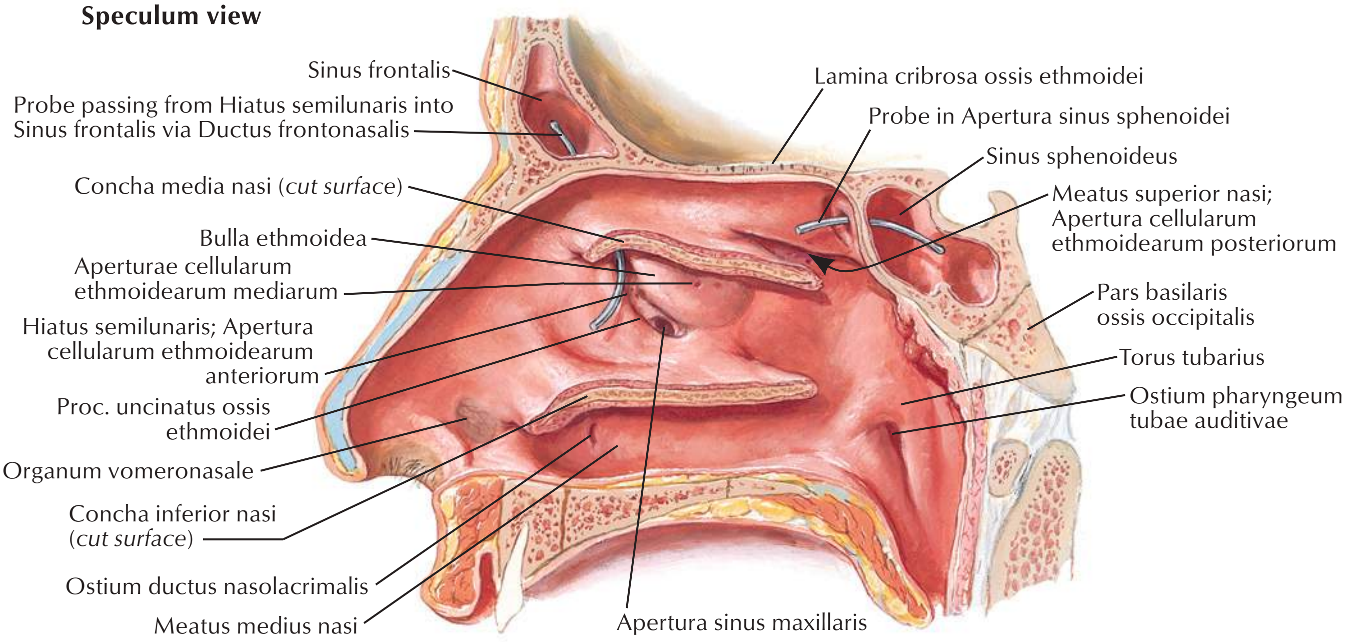


Sinus frontalis
Concha superior nasi
Meatus superior nasi
Concha media nasi
Agger nasi
Atrium meatus medii nasi
Meatus medius nasi
Concha inferior nasi
Organum vomeronasale
Limen nasi
Vestibulum nasi
Meatus inferior nasi
Proc. palatinus maxillae
Canalis incisivus
Recessus sphenoethmoideus
Apertura sinus sphenoidei
Hypophysis (Glandula pituitaria) in Sella turcica
Sinus sphenoideus
Tonsilla pharyngea (adenoid, if enlarged)
Pars basilaris ossis occipitalis
Raphe pharyngis
Choana
Torus tubarius
Ostium pharyngeum tubae auditivae
Recessus pharyngeus
Lamina horizontalis ossis palatini
Palatum molle



Concha medius nasi
Meatus medius nasi
Septum nasi (bulging)
To Nasopharynx (via Choana)
Concha media nasi
Meatus inferior nasi

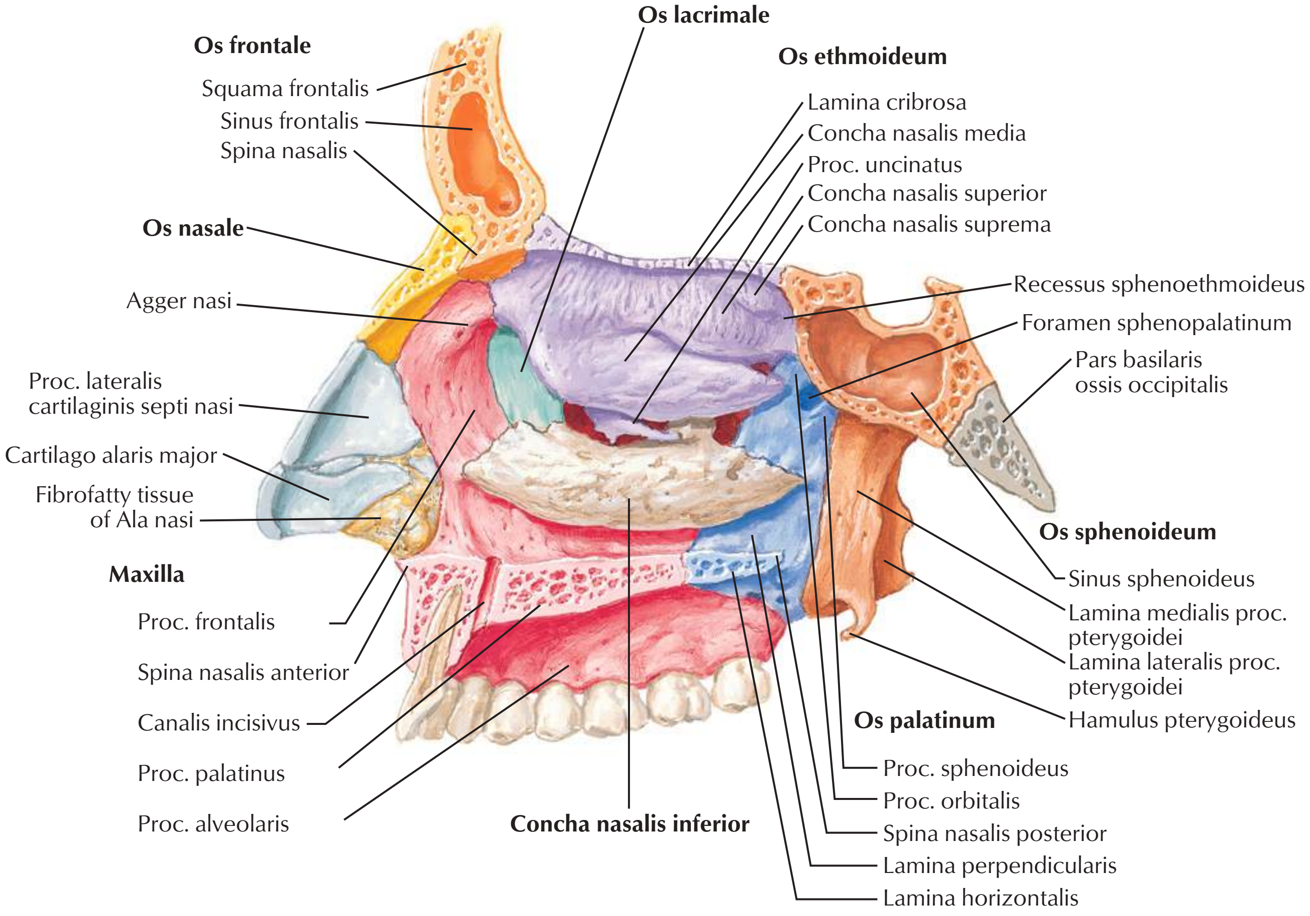
Speculum view

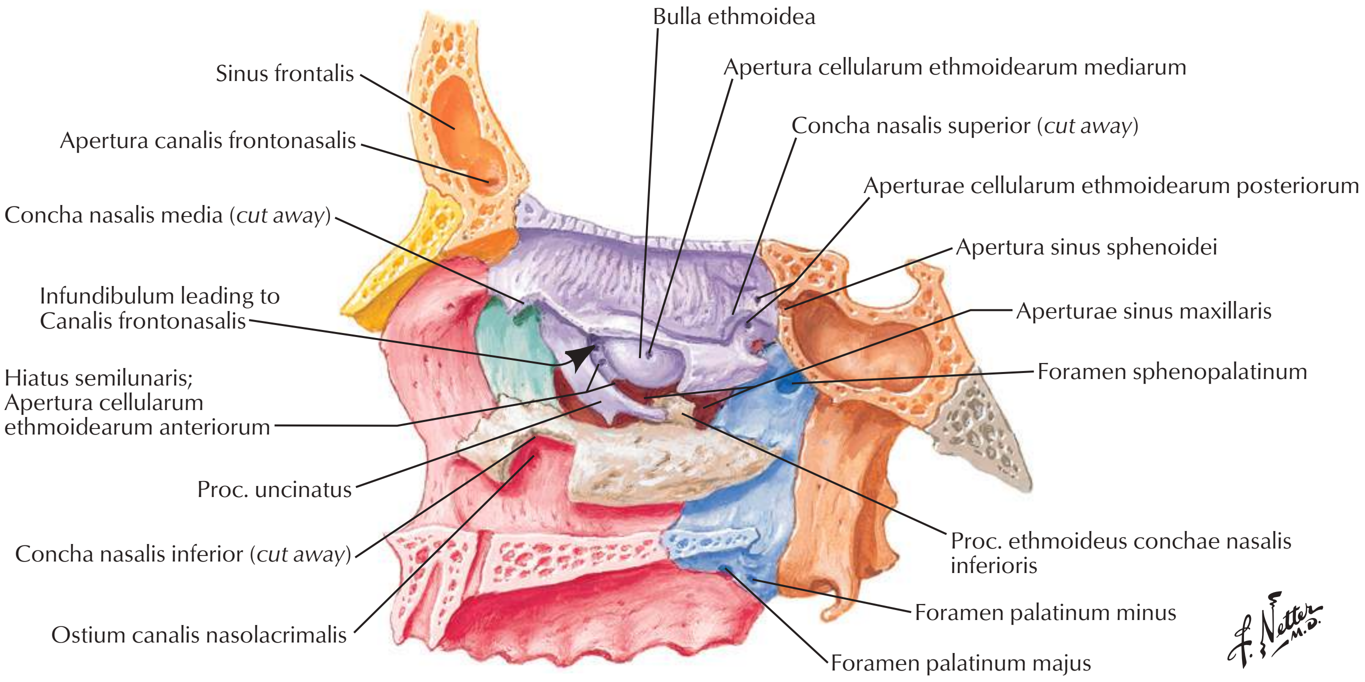


Sinus frontalis
Probe passing from Hiatus semilunaris into Sinus frontalis via Ductus frontonasalis
Concha media nasi (*cut surface*)
Bulla ethmoidea
Aperturae cellularum ethmoidearum mediarum
Hiatus semilunaris; Apertura cellularum ethmoidearum anteriorum
Proc. uncinatus ossis ethmoidei
Organum vomeronasale
Concha inferior nasi (*cut surface*)
Ostium ductus nasolacrimalis
Meatus medius nasi
Apertura sinus maxillaris
Lamina cribrosa ossis ethmoidei
Probe in Apertura sinus sphenoidei
Sinus sphenoideus
Meatus superior nasi; Apertura cellularum ethmoidearum posteriorum
Pars basilaris ossis occipitalis
Torus tubarius
Ostium pharyngeum tubae auditivae

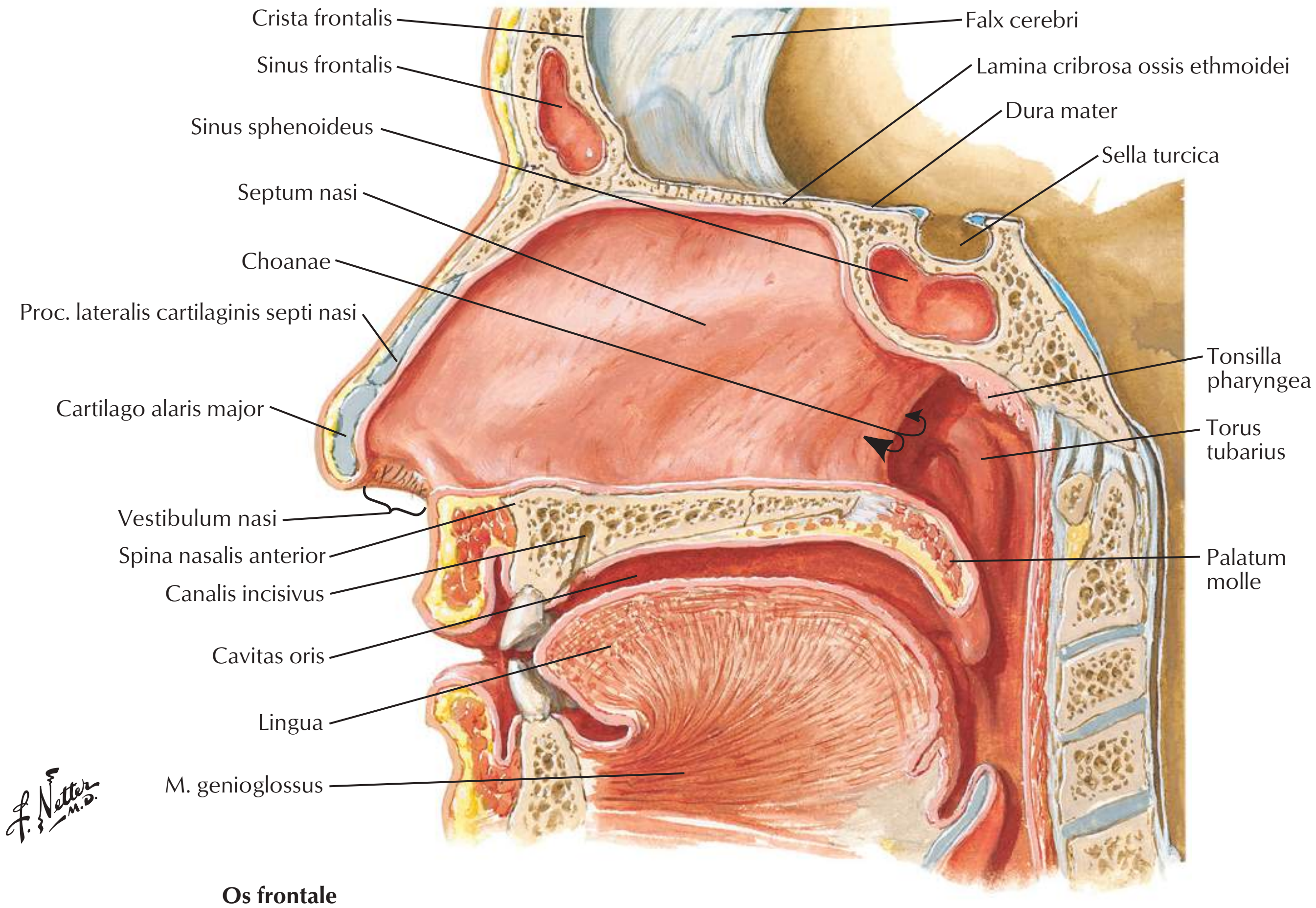
Lateral Wall of Nasal Cavity (continued)

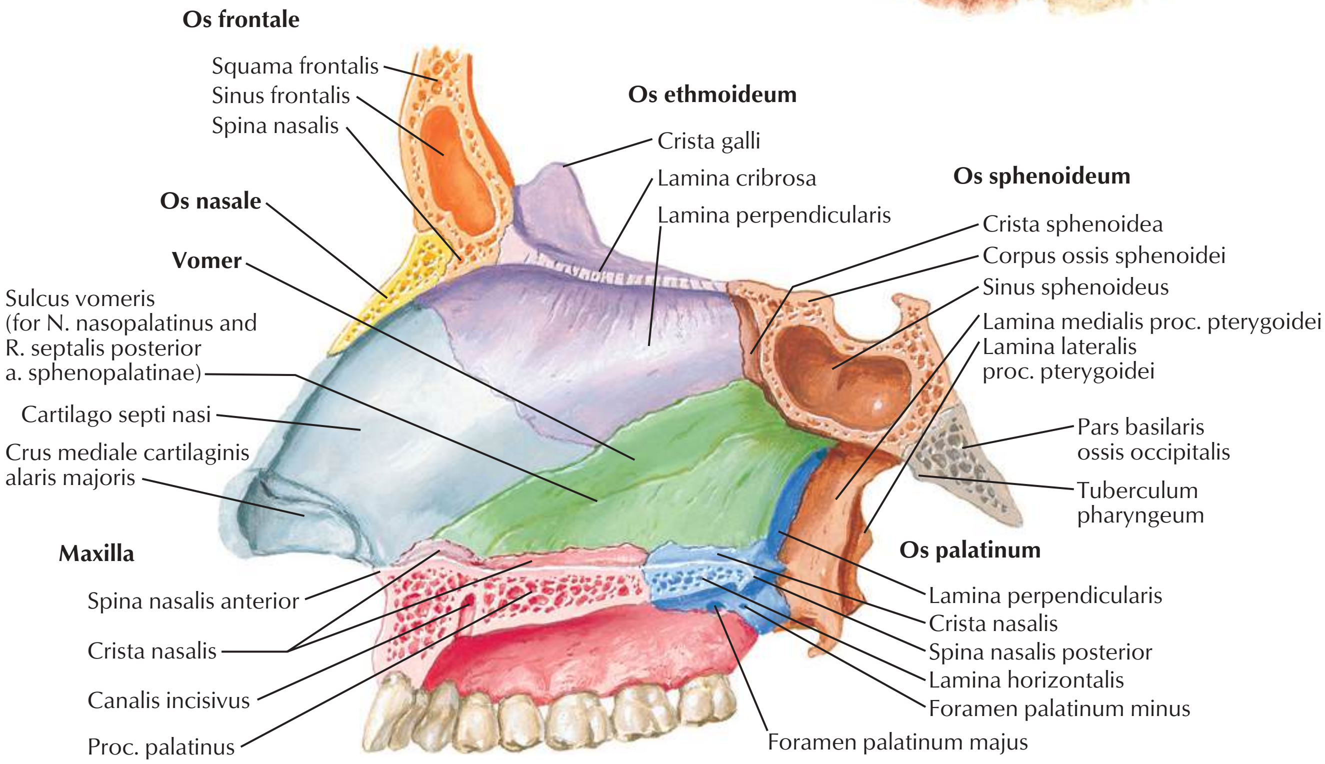
See also Plates 43, 45


Os frontale
Squama frontalis
Sinus frontalis
Spina nasalis
Os nasale
Agger nasi
Proc. lateralis cartilaginis septi nasi
Cartilago alaris major
Fibrofatty tissue of Ala nasi
Maxilla
Proc. frontalis
Spina nasalis anterior
Canalis incisivus
Proc. palatinus
Proc. alveolaris
Os lacrimale
Os ethmoideum
Lamina cribrosa
Concha nasalis media
Proc. uncinatus
Concha nasalis superior
Concha nasalis suprema
Recessus sphenoethmoideus
Foramen sphenopalatinum
Pars basilaris ossis occipitalis
Os sphenoideum
Sinus sphenoideus
Lamina medialis proc. pterygoidei
Lamina lateralis proc. pterygoidei
Hamulus pterygoideus
Os palatinum
Proc. sphenoideus
Proc. orbitalis
Spina nasalis posterior
Lamina perpendicularis
Lamina horizontalis
Concha nasalis inferior


Bulla ethmoidea
Apertura cellularum ethmoidearum mediarum
Concha nasalis superior (*cut away*)
Aperturae cellularum ethmoidearum posteriorum
Apertura sinus sphenoidei
Aperturae sinus maxillaris
Foramen sphenopalatinum
Proc. ethmoideus conchae nasalis inferioris
Foramen palatinum minus
Foramen palatinum majus
Sinus frontalis
Apertura canalis frontonasalis
Concha nasalis media (*cut away*)
Infundibulum leading to Canalis frontonasalis
Hiatus semilunaris; Apertura cellularum ethmoidearum anteriorum
Proc. uncinatus
Concha nasalis inferior (*cut away*)
Ostium canalis nasolacrimalis
F. Netter M.D.

See also Plate 15

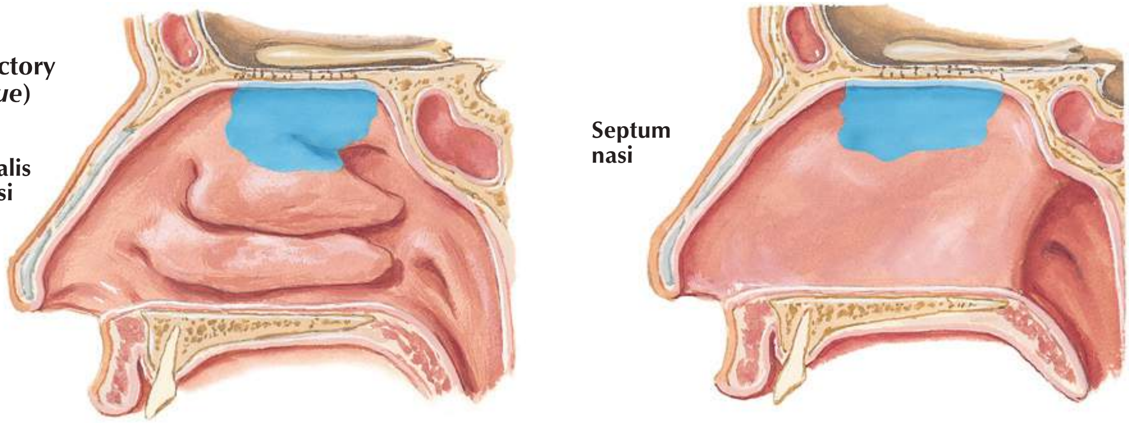

Crista frontalis
Sinus frontalis
Sinus sphenoideus
Septum nasi
Choanae
Proc. lateralis cartilaginis septi nasi
Cartilago alaris major
Vestibulum nasi
Spina nasalis anterior
Canalis incisivus
Cavitas oris
Lingua
M. genioglossus
Falx cerebri
Lamina cribrosa ossis ethmoidei
Dura mater
Sella turcica
Tonsilla pharyngea
Torus tubarius
Palatum molle
F. Netter M.D.

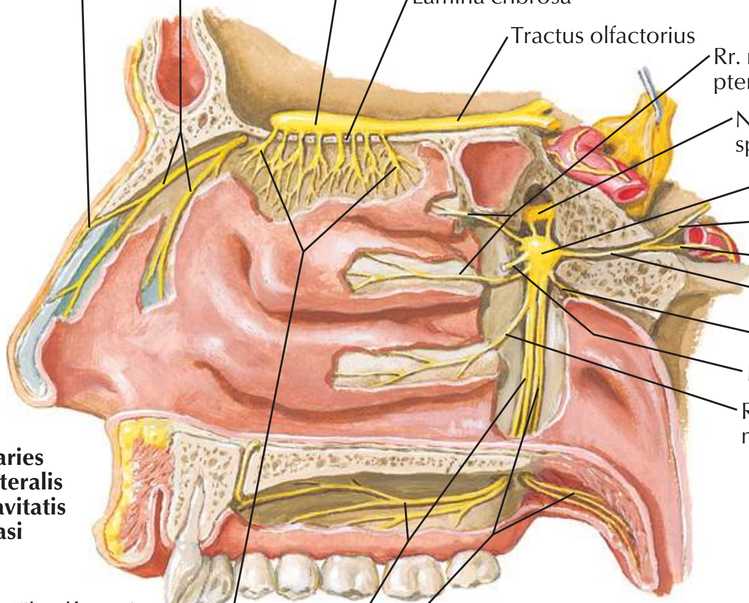

Os frontale
Squama frontalis
Sinus frontalis
Spina nasalis
Os nasale
Vomer
Sulcus vomeris (for N. nasopalatinus and R. septalis posterior a. sphenopalatinae)
Cartilago septi nasi
Crus mediale cartilaginis alaris majoris
Maxilla
Spina nasalis anterior
Crista nasalis
Canalis incisivus
Proc. palatinus
Os ethmoideum
Crista galli
Lamina cribrosa
Lamina perpendicularis
Os sphenoideum
Crista sphenoidea
Corpus ossis sphenoidei
Sinus sphenoideus
Lamina medialis proc. pterygoidei
Lamina lateralis proc. pterygoidei
Pars basilaris ossis occipitalis
Tuberculum pharyngeum
Os palatinum
Lamina perpendicularis
Crista nasalis
Spina nasalis posterior
Lamina horizontalis
Foramen palatinum minus
Foramen palatinum majus

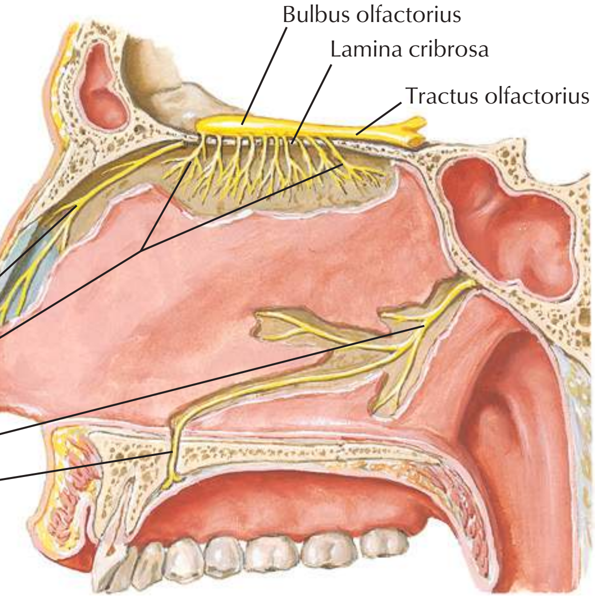
Nerves of Nasal Cavity

See also Plates 63, 73, 130

Distribution of olfactory mucosa (*shaded blue*)

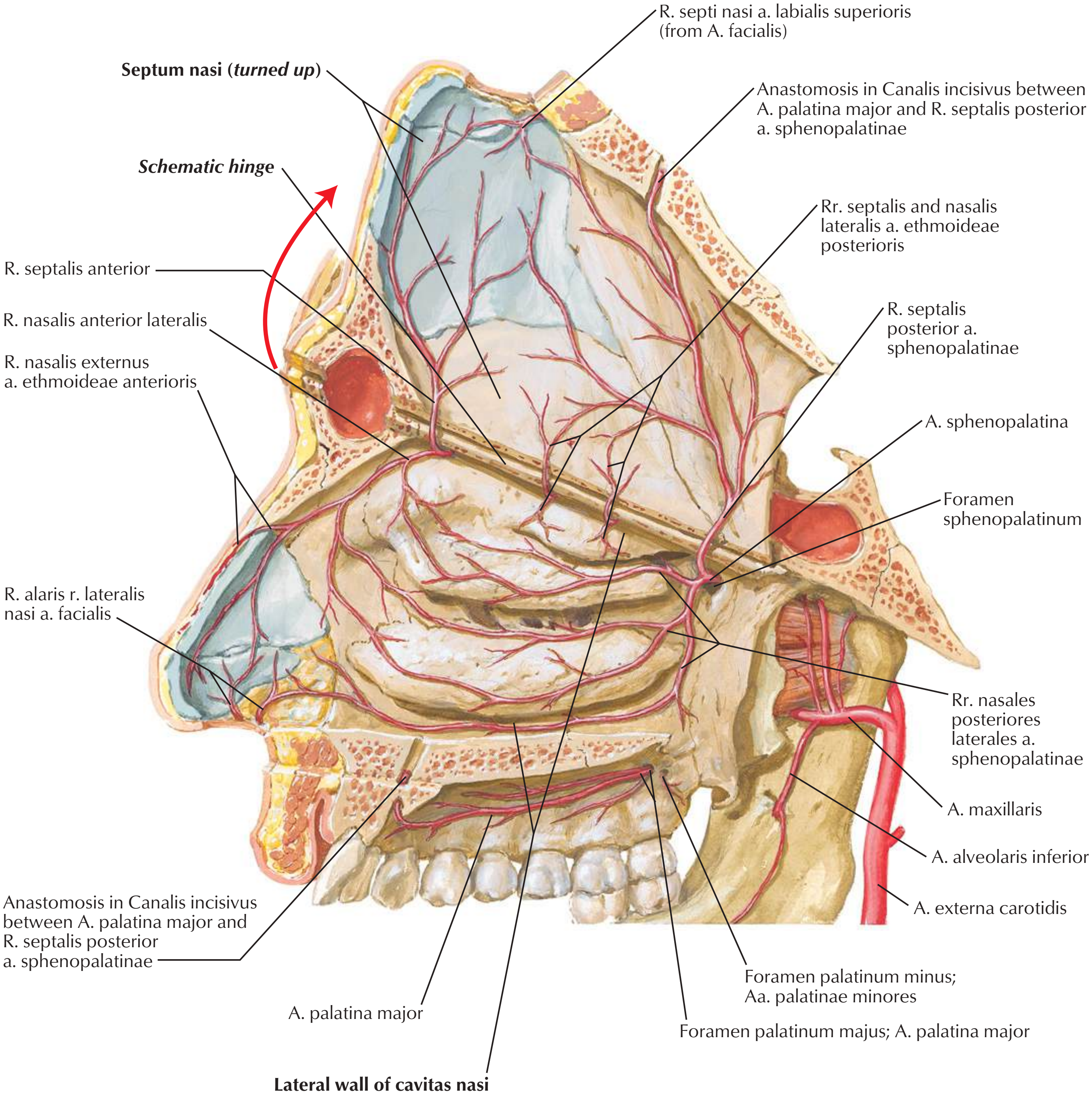

Paries lateralis cavitatis nasi
Septum nasi


R. nasalis externus n. ethmoidei anterioris (from CN V_1)
Rr. nasales interni laterales n. ethmoidei anterioris (from CN V_1)
Bulbus olfactorius
Lamina cribrosa
Tractus olfactorius
Rr. nasales posteriores superiores laterales (from Ganglion pterygopalatinum)
N. maxillaris (CN V_2) (Foramen sphenopalatinum dissected away)
Ganglion pterygopalatinum
N. petrosus major
N. petrosus profundus
N. canalis pterygoidei (Vidii)
N. pharyngeus (from Ganglion pterygopalatinum)
N. nasopalatinus (from CN V_2) passing to septum nasi (*cut*)
R. nasalis posterior inferior n. palatini majoris (from CN V_2)
Paries lateralis cavitatis nasi
Fila olfactoria (N. olfactorius; CN I)
Nn. palatini (from CN V_2) { major minor


Bulbus olfactorius
Lamina cribrosa
Tractus olfactorius
R. nasalis internus medialis n. ethmoidei anterioris (from CN V_1)
Fila olfactoria (N. olfactorius; CN I)
N. nasopalatinus (from CN V_2)
Canalis incisivus
Septum nasi

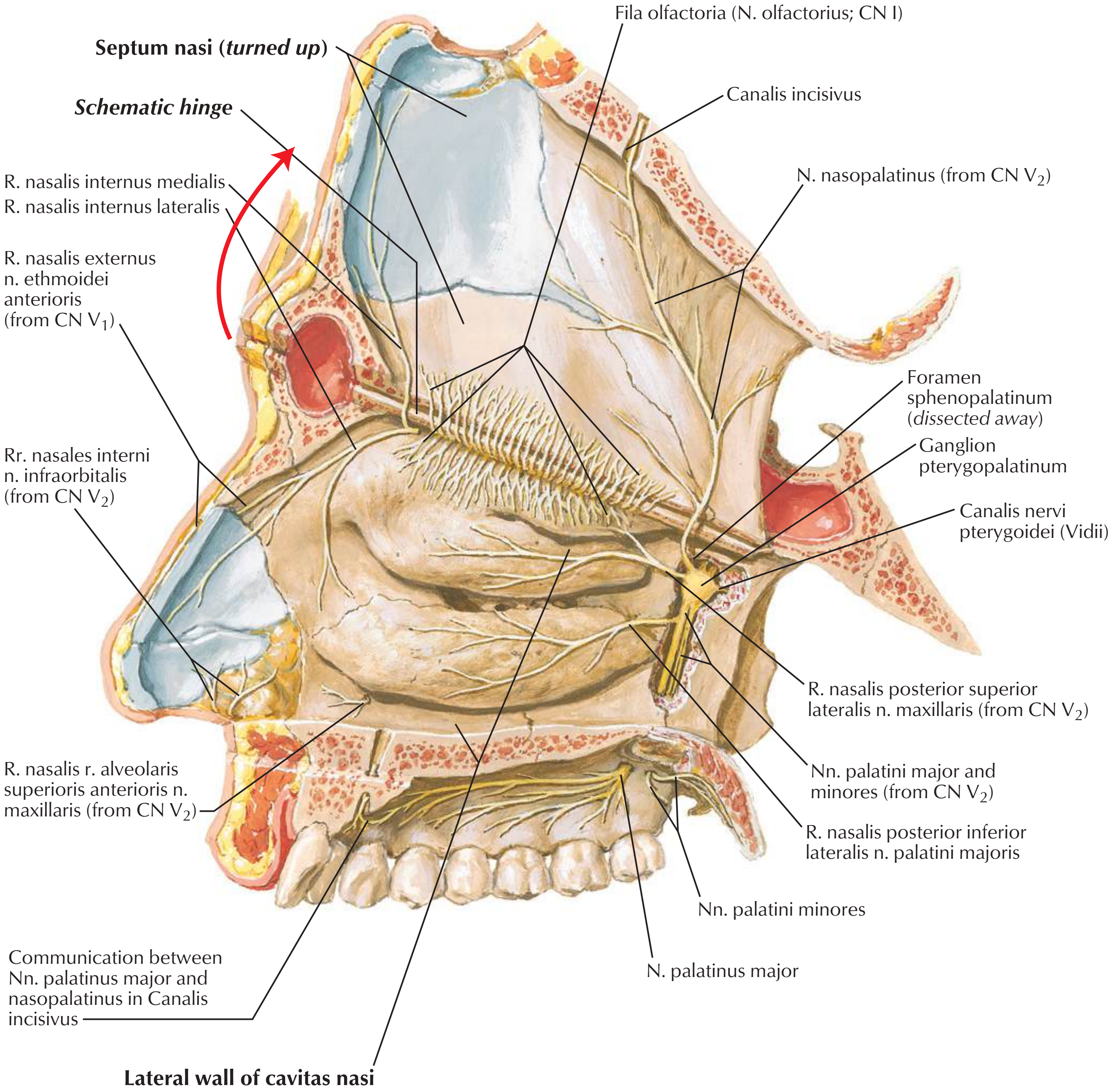
F. Netter M.D.

See also Plates 57, 63

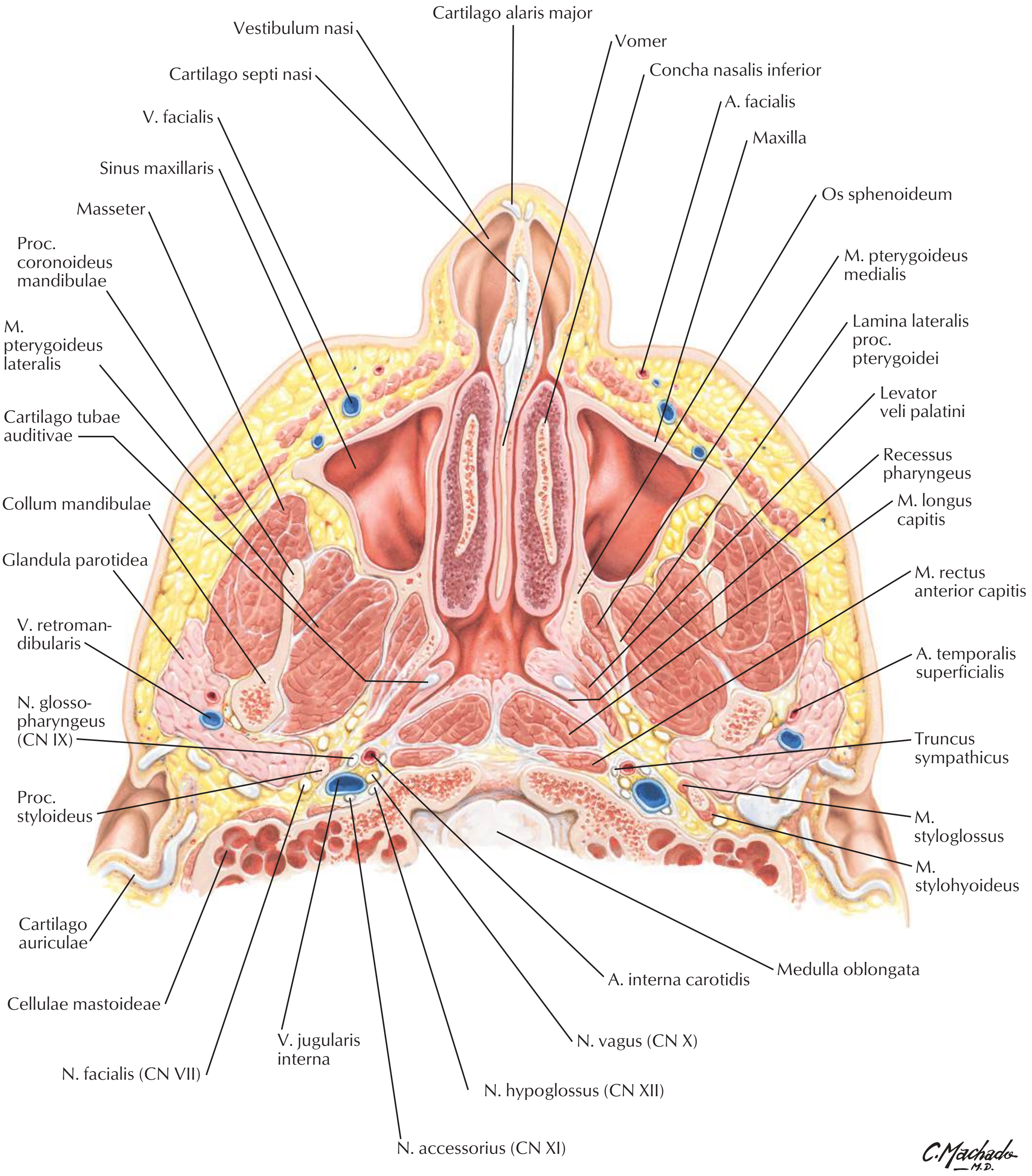

R. septi nasi a. labialis superioris (from A. facialis)
Septum nasi (*turned up*)
Anastomosis in Canalis incisivus between A. palatina major and R. septalis posterior a. sphenopalatinae
Schematic hinge
Rr. septalis and nasalis lateralis a. ethmoideae posterioris
R. septalis anterior
R. nasalis anterior lateralis
R. septalis posterior a. sphenopalatinae
R. nasalis externus a. ethmoideae anterioris
A. sphenopalatina
Foramen sphenopalatinum
R. alaris r. lateralis nasi a. facialis
Rr. nasales posteriores laterales a. sphenopalatinae
A. maxillaris
A. alveolaris inferior
A. externa carotidis
Anastomosis in Canalis incisivus between A. palatina major and R. septalis posterior a. sphenopalatinae
Foramen palatinum minus; Aa. palatinae minores
A. palatina major
Foramen palatinum majus; A. palatina major
Lateral wall of cavitas nasi

Nerves of Nasal Cavity: Bony Nasal Septum Turned Up

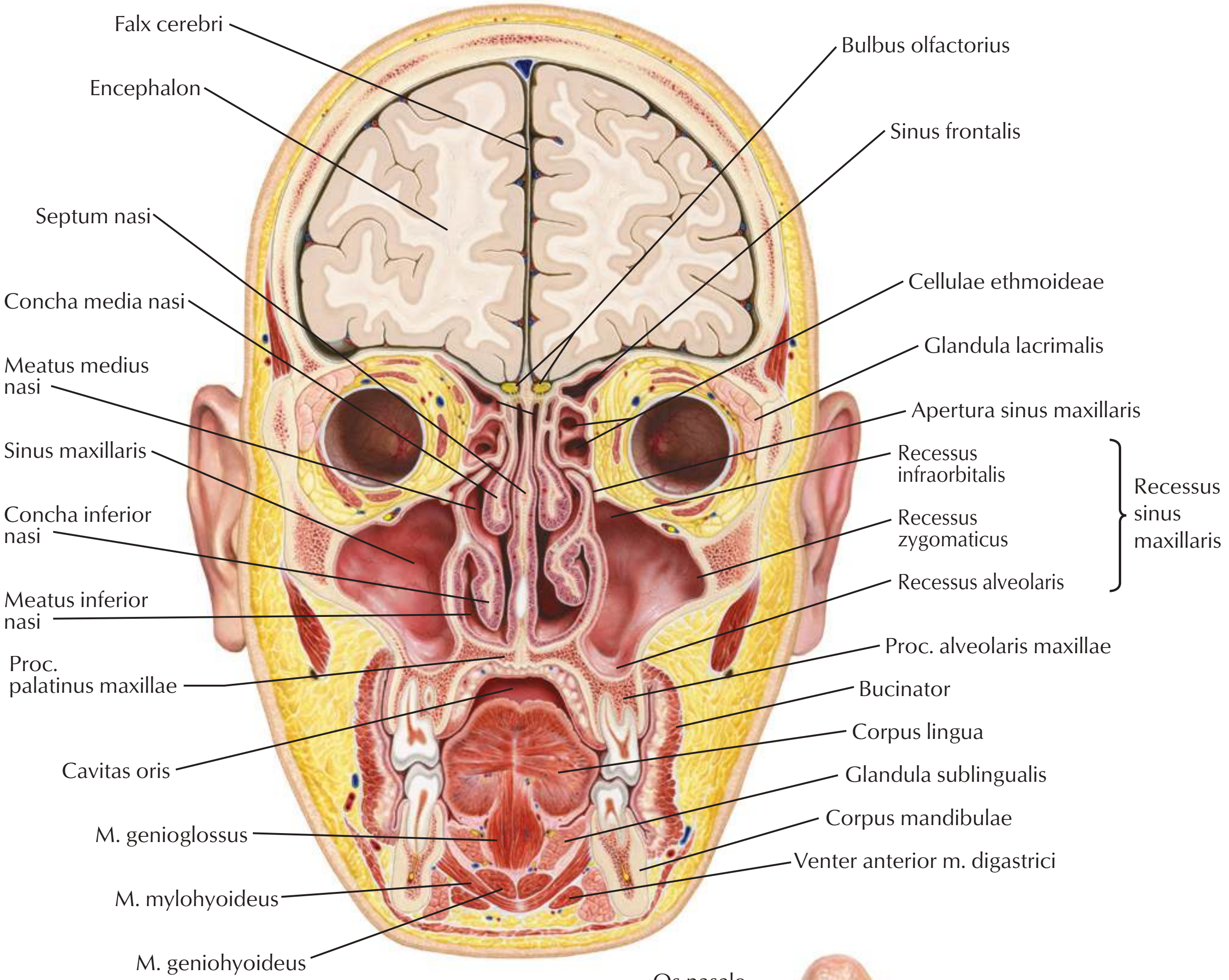
See also Plate 62


Fila olfactoria (N. olfactorius; CN I)
Septum nasi (*turned up*)
Schematic hinge
Canalis incisivus
N. nasopalatinus (from CN V_2)
R. nasalis internus medialis
R. nasalis internus lateralis
R. nasalis externus n. ethmoidei anterioris (from CN V_1)
Foramen sphenopalatinum (*dissected away*)
Ganglion pterygopalatinum
Rr. nasales interni n. infraorbitalis (from CN V_2)
Canalis nervi pterygoidei (Vidii)
R. nasalis posterior superior lateralis n. maxillaris (from CN V_2)
R. nasalis r. alveolaris superioris anterioris n. maxillaris (from CN V_2)
Nn. palatini major and minores (from CN V_2)
R. nasalis posterior inferior lateralis n. palatini majoris
Nn. palatini minores
Communication between Nn. palatinus major and nasopalatinus in Canalis incisivus
N. palatinus major
Lateral wall of cavitas nasi

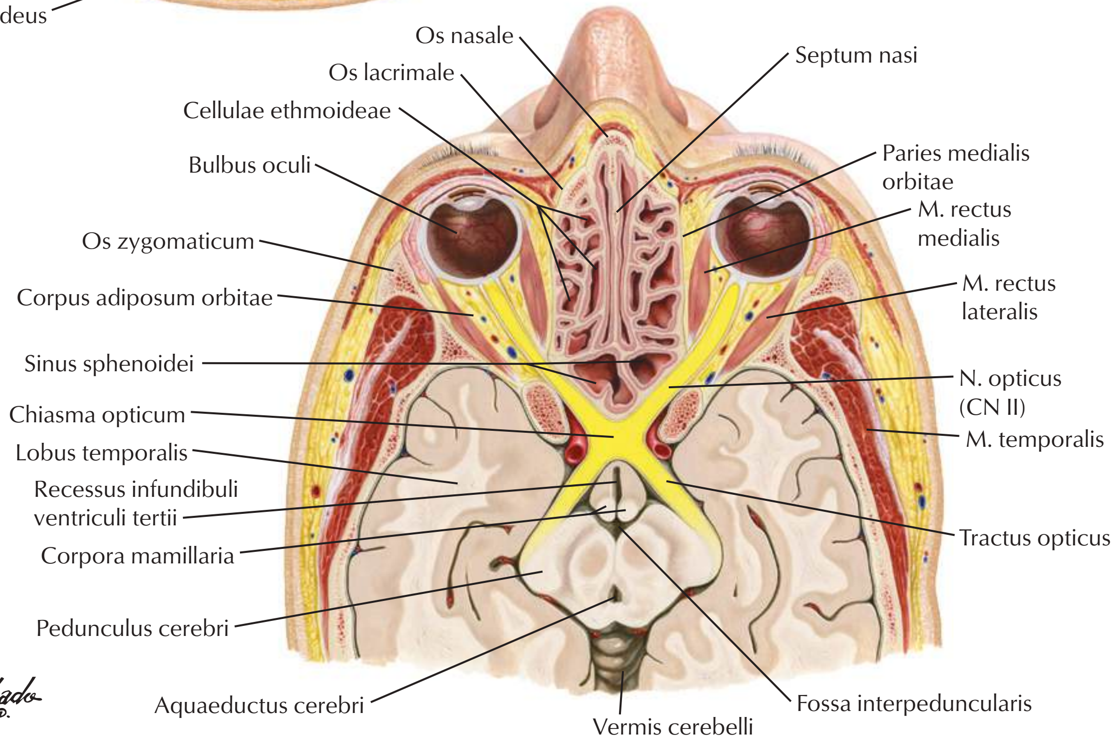
F. Netter M.D.


Cartilago alaris major
Vestibulum nasi
Vomer
Concha nasalis inferior
Cartilago septi nasi
A. facialis
V. facialis
Maxilla
Sinus maxillaris
Os sphenoideum
Masseter
M. pterygoideus medialis
Proc. coronoideus mandibulae
Lamina lateralis proc. pterygoidei
M. pterygoideus lateralis
Levator veli palatini
Cartilago tubae auditivae
Recessus pharyngeus
M. longus capitis
Collum mandibulae
M. rectus anterior capitis
Glandula parotidea
V. retromandibularis
A. temporalis superficialis
N. glossopharyngeus (CN IX)
Truncus sympathicus
Proc. styloideus
M. styloglossus
M. stylohyoideus
Cartilago auriculae
Medulla oblongata
A. interna carotidis
Cellulae mastoideae
V. jugularis interna
N. vagus (CN X)
N. facialis (CN VII)
N. hypoglossus (CN XII)
N. accessorius (CN XI)
C. Machado M.D.

Coronal section


Falx cerebri
Encephalon
Septum nasi
Concha media nasi
Meatus medius nasi
Sinus maxillaris
Concha inferior nasi
Meatus inferior nasi
Proc. palatinus maxillae
Cavitas oris
M. genioglossus
M. mylohyoideus
M. geniohyoideus
Bulbus olfactorius
Sinus frontalis
Cellulae ethmoideae
Glandula lacrimalis
Apertura sinus maxillaris
Recessus infraorbitalis
Recessus zygomaticus
Recessus alveolaris
Recessus sinus maxillaris
Proc. alveolaris maxillae
Bucinator
Corpus lingua
Glandula sublingualis
Corpus mandibulae
Venter anterior m. digastrici

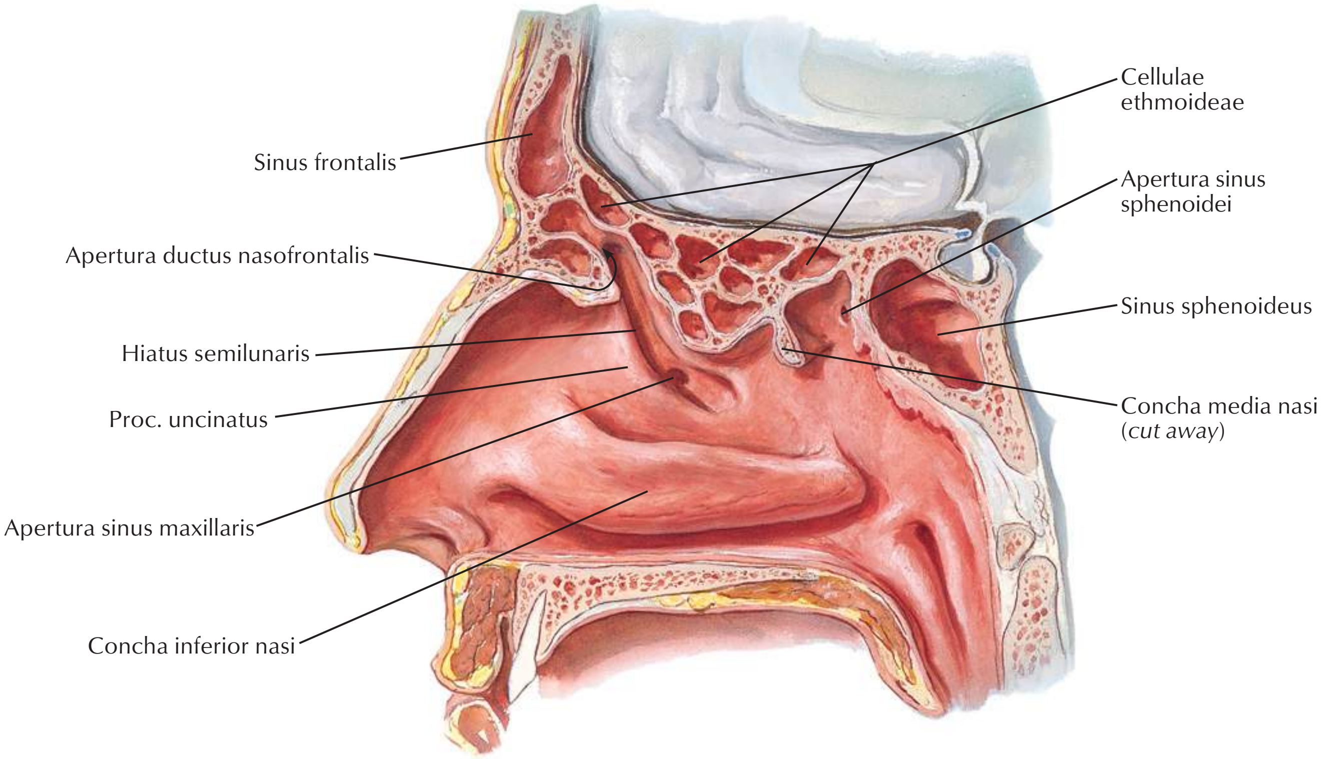
Transverse section

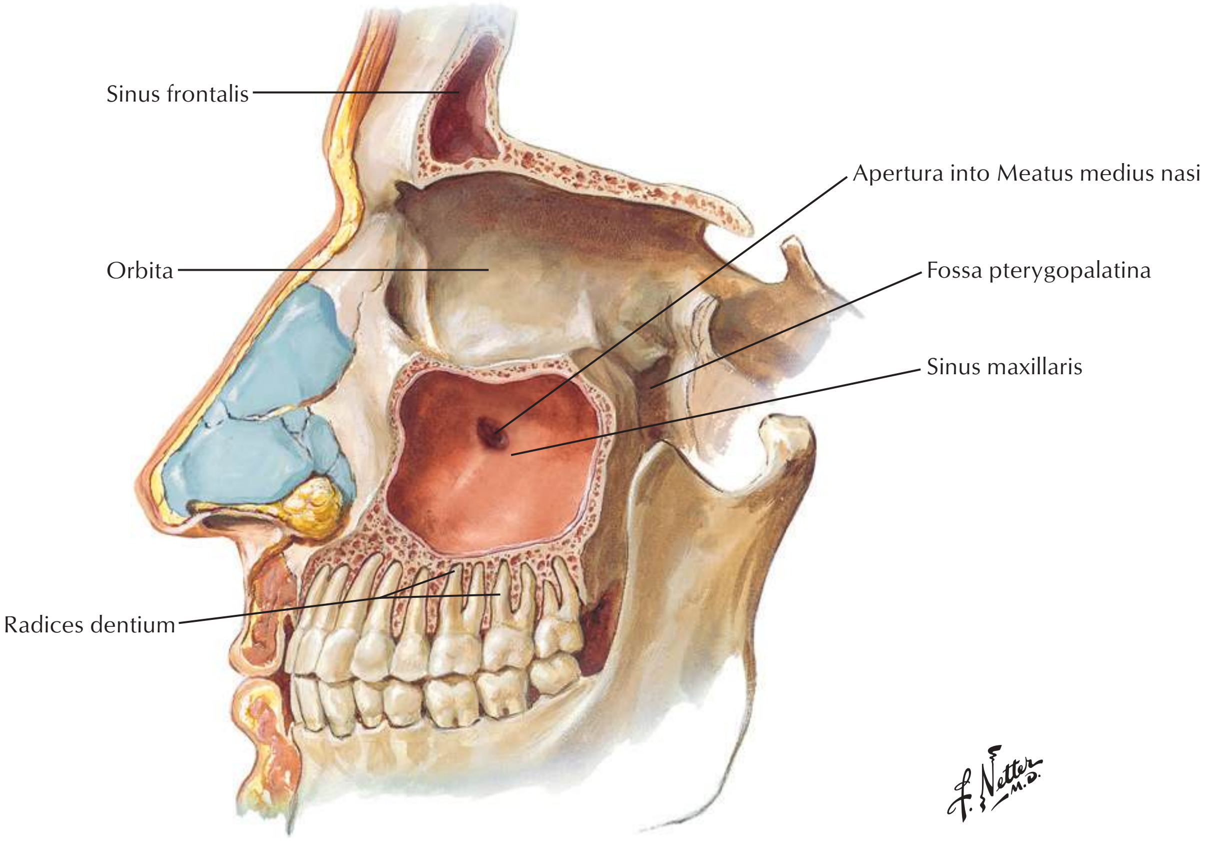

Os nasale
Os lacrimale
Cellulae ethmoideae
Bulbus oculi
Os zygomaticum
Corpus adiposum orbitae
Sinus sphenoidei
Chiasma opticum
Lobus temporalis
Recessus infundibuli ventriculi tertii
Corpora mamillaria
Pedunculus cerebri
Aquaeductus cerebri
Vermis cerebelli
Septum nasi
Paries medialis orbitae
M. rectus medialis
M. rectus lateralis
N. opticus (CN II)
M. temporalis
Tractus opticus
Fossa interpeduncularis

C.Machado M.D.

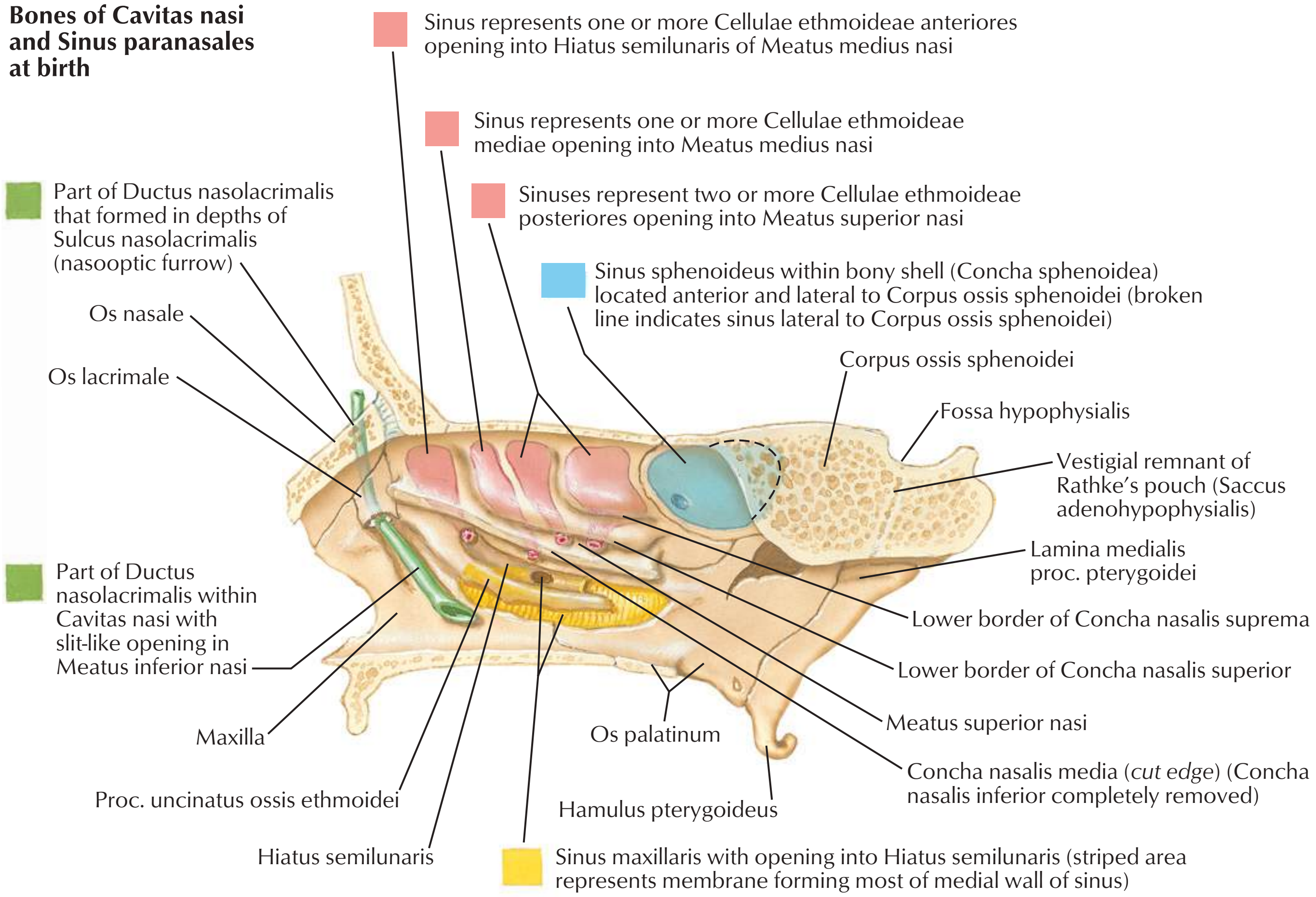
Paranasal Sinuses: Parasagittal Views

See also Plate 43

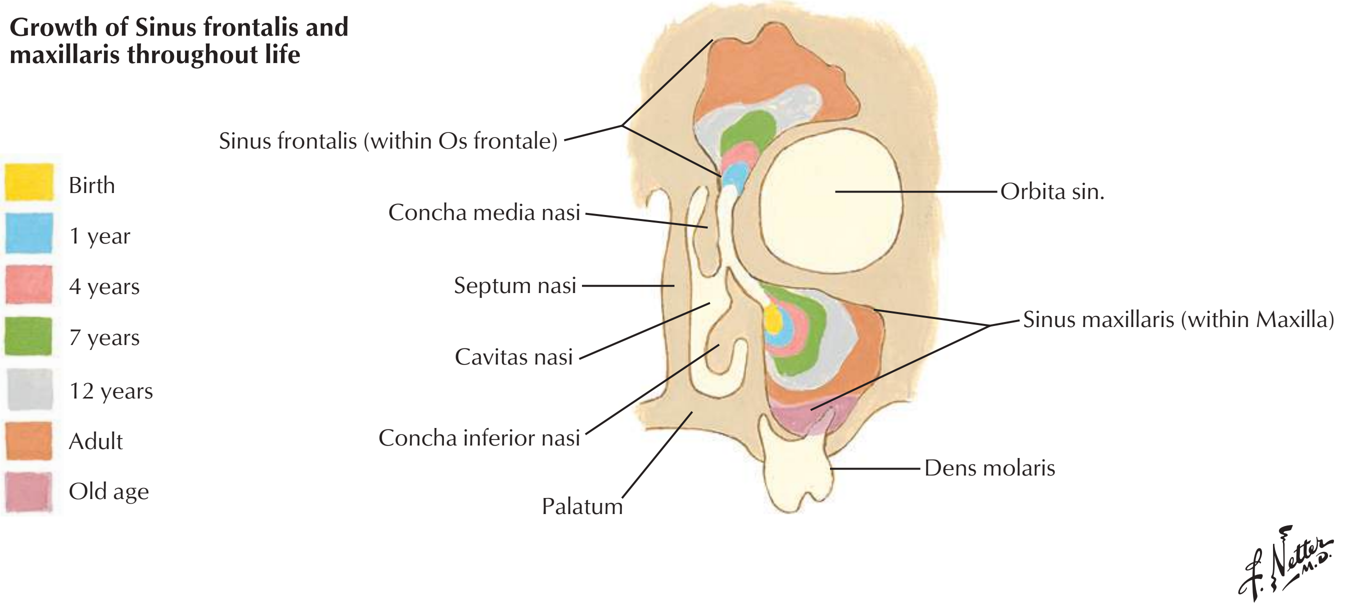

Sinus frontalis
Apertura ductus nasofrontalis
Hiatus semilunaris
Proc. uncinatus
Apertura sinus maxillaris
Concha inferior nasi
Cellulae ethmoideae
Apertura sinus sphenoidei
Sinus sphenoideus
Concha media nasi (*cut away*)


Sinus frontalis
Orbita
Radices dentium
Apertura into Meatus medius nasi
Fossa pterygopalatina
Sinus maxillaris
f. Netter M.D.

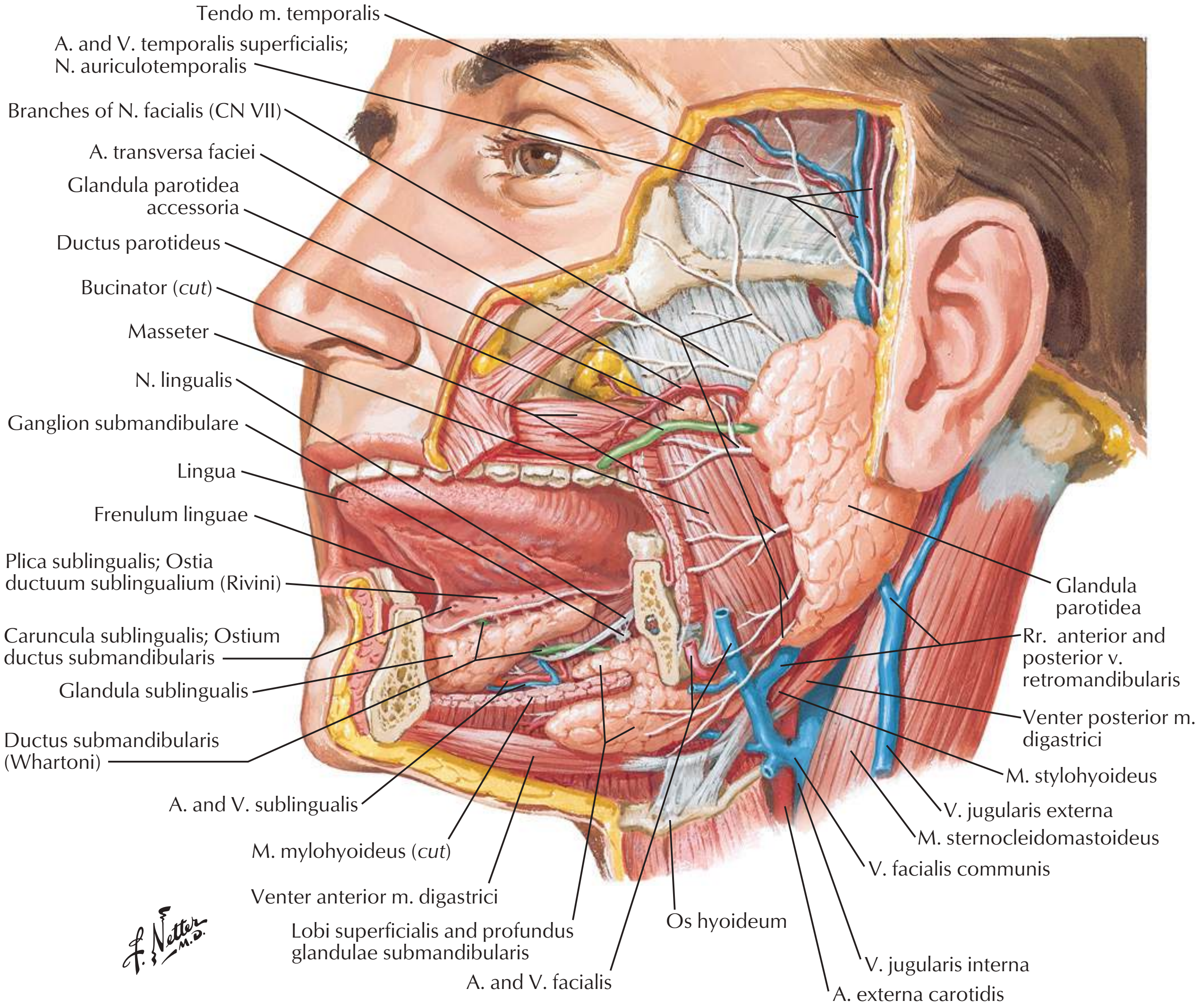
Bones of Cavitas nasi and Sinus paranasales at birth


🟥 Sinus represents one or more Cellulae ethmoideae anteriores opening into Hiatus semilunaris of Meatus medius nasi
🟥 Sinus represents one or more Cellulae ethmoideae mediae opening into Meatus medius nasi
🟥 Sinuses represent two or more Cellulae ethmoideae posteriores opening into Meatus superior nasi
🟦 Sinus sphenoideus within bony shell (Concha sphenoidea) located anterior and lateral to Corpus ossis sphenoidei (broken line indicates sinus lateral to Corpus ossis sphenoidei)
🟩 Part of Ductus nasolacrimalis that formed in depths of Sulcus nasolacrimalis (nasooptic furrow)
Os nasale
Os lacrimale
Corpus ossis sphenoidei
Fossa hypophysialis
Vestigial remnant of Rathke's pouch (Saccus adenohypophysialis)
Lamina medialis proc. pterygoidei
🟩 Part of Ductus nasolacrimalis within Cavitas nasi with slit-like opening in Meatus inferior nasi
Lower border of Concha nasalis suprema
Lower border of Concha nasalis superior
Meatus superior nasi
Maxilla
Os palatinum
Concha nasalis media (*cut edge*) (Concha nasalis inferior completely removed)
Proc. uncinatus ossis ethmoidei
Hamulus pterygoideus
Hiatus semilunaris
🟨 Sinus maxillaris with opening into Hiatus semilunaris (striped area represents membrane forming most of medial wall of sinus)

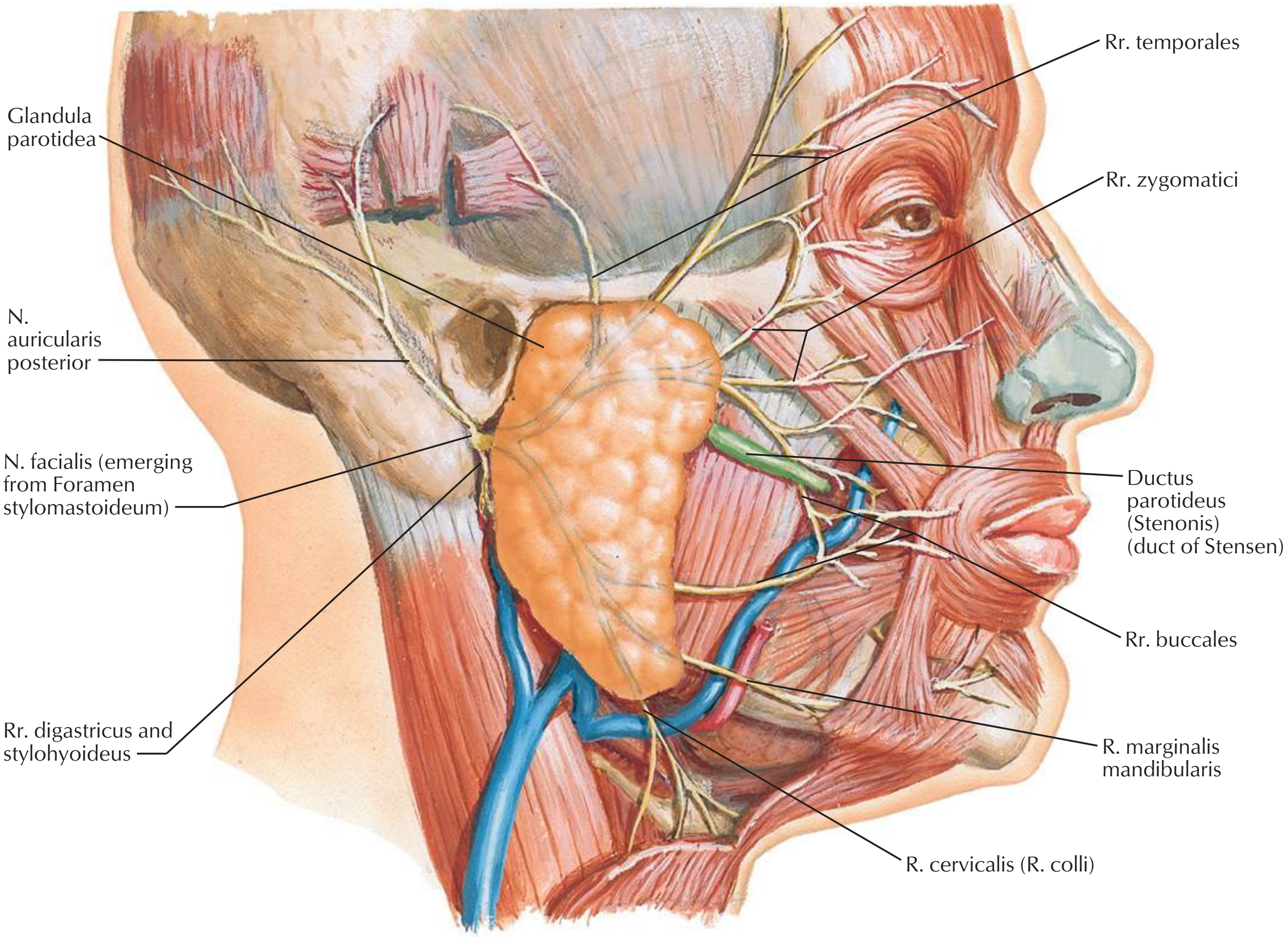
Growth of Sinus frontalis and maxillaris throughout life

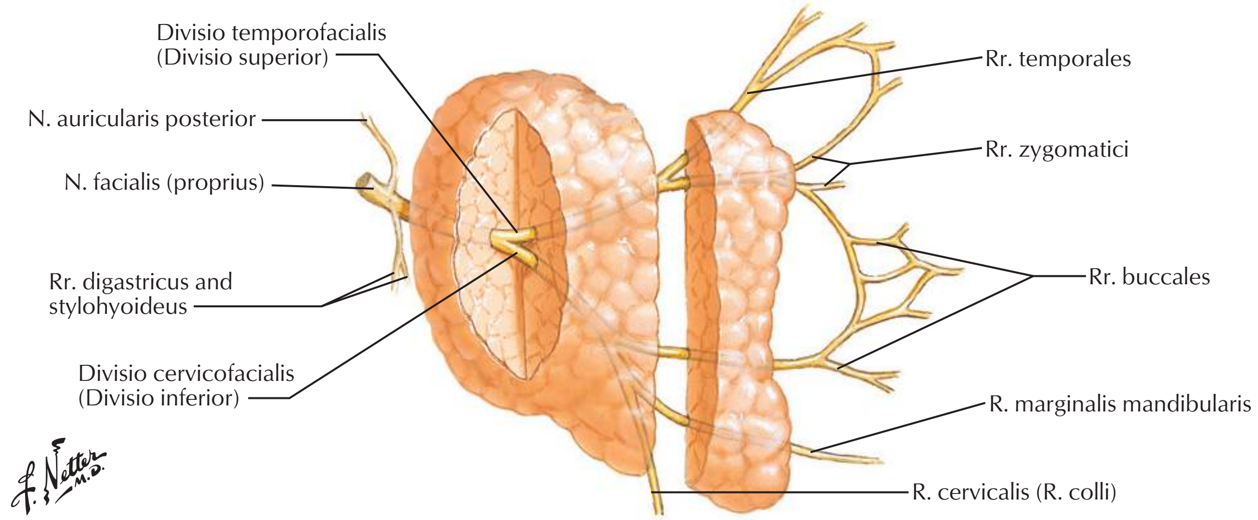

🟨 Birth
🟦 1 year
🟥 4 years
🟩 7 years
⬜ 12 years
🟧 Adult
🟪 Old age
Sinus frontalis (within Os frontale)
Concha media nasi
Orbita sin.
Septum nasi
Sinus maxillaris (within Maxilla)
Cavitas nasi
Concha inferior nasi
Dens molaris
Palatum
F. Netter M.D.

See also Plates 54, 144, 145


Tendo m. temporalis
A. and V. temporalis superficialis; N. auriculotemporalis
Branches of N. facialis (CN VII)
A. transversa faciei
Glandula parotidea accessoria
Ductus parotideus
Bucinator (*cut*)
Masseter
N. lingualis
Ganglion submandibulare
Lingua
Frenulum linguae
Plica sublingualis; Ostia ductuum sublingualium (Rivini)
Caruncula sublingualis; Ostium ductus submandibularis
Glandula sublingualis
Ductus submandibularis (Whartoni)
A. and V. sublingualis
M. mylohyoideus (*cut*)
Venter anterior m. digastrici
Lobi superficialis and profundus glandulae submandibularis
A. and V. facialis
Os hyoideum
Glandula parotidea
Rr. anterior and posterior v. retromandibularis
Venter posterior m. digastrici
M. stylohyoideus
V. jugularis externa
M. sternocleidomastoideus
V. facialis communis
V. jugularis interna
A. externa carotidis
F. Netter M.D.

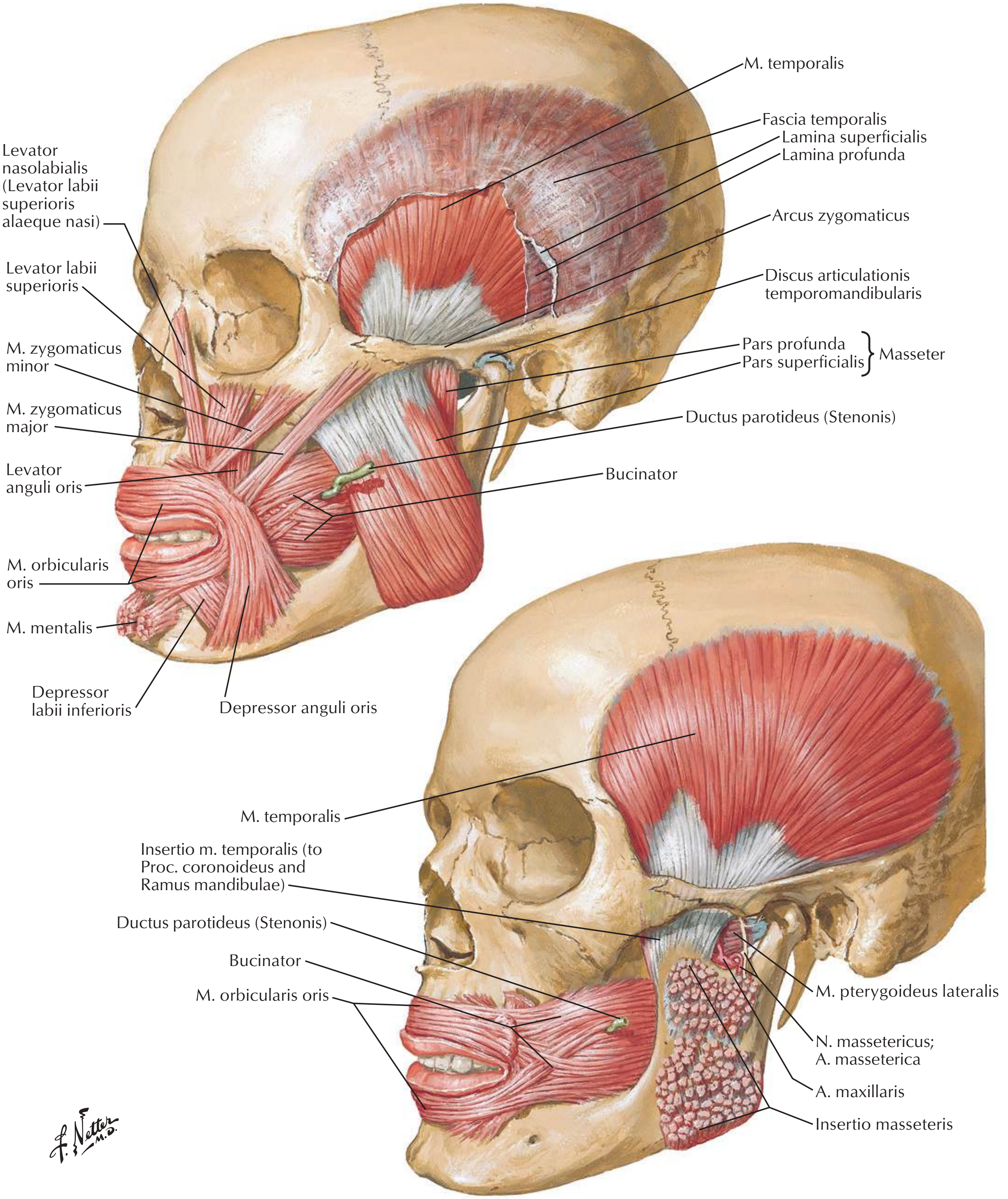
See also Plates 53, 134


Glandula parotidea
N. auricularis posterior
N. facialis (emerging from Foramen stylomastoideum)
Rr. digastricus and stylohyoideus
Rr. temporales
Rr. zygomatici
Ductus parotideus (Stenonis) (duct of Stensen)
Rr. buccales
R. marginalis mandibularis
R. cervicalis (R. colli)


Divisio temporofacialis (Divisio superior)
N. auricularis posterior
N. facialis (proprius)
Rr. digastricus and stylohyoideus
Divisio cervicofacialis (Divisio inferior)
Rr. temporales
Rr. zygomatici
Rr. buccales
R. marginalis mandibularis
R. cervicalis (R. colli)
F. Netter M.D.

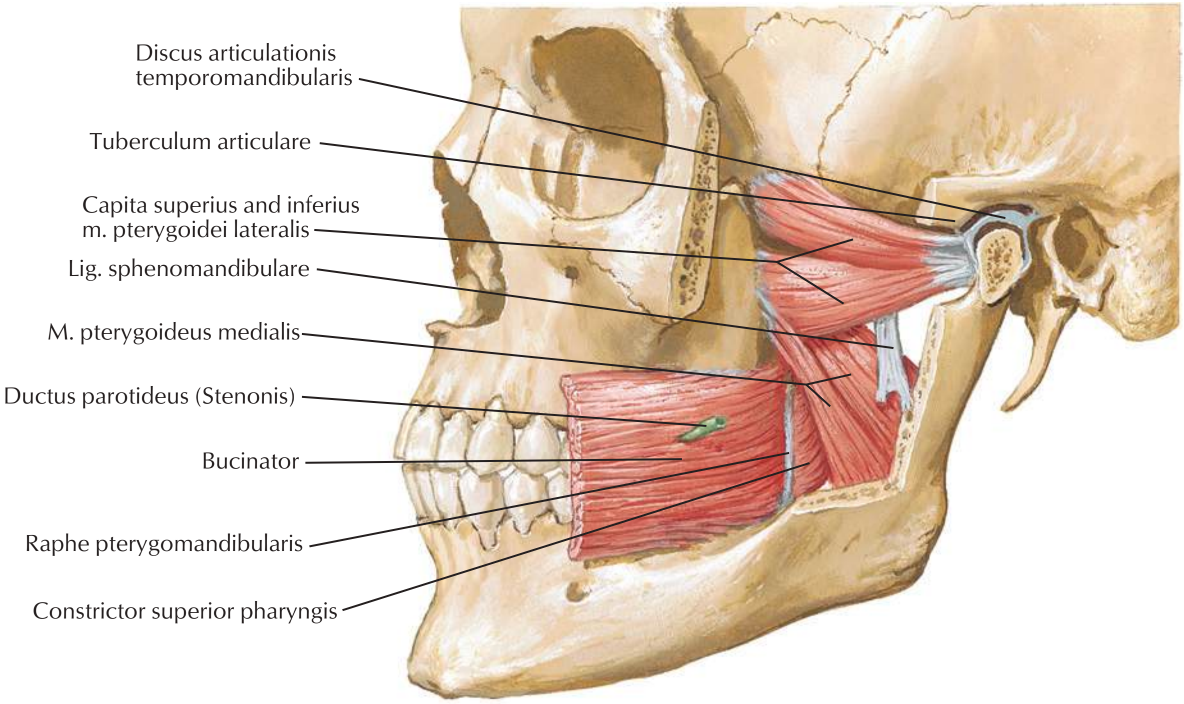
Muscles Involved in Mastication

For facial muscles see Plate 31

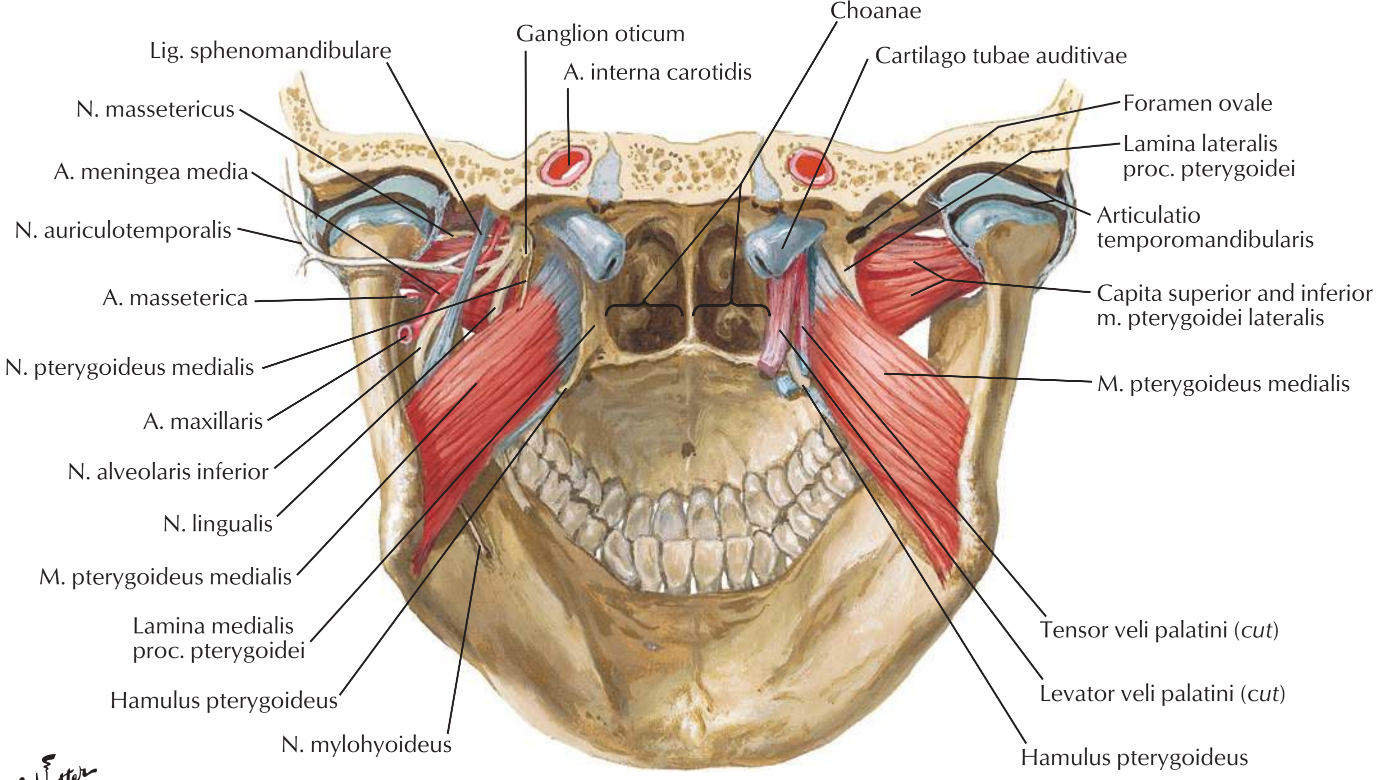

M. temporalis
Fascia temporalis
Lamina superficialis
Lamina profunda
Levator nasolabialis (Levator labii superioris alaeque nasi)
Levator labii superioris
Arcus zygomaticus
Discus articulationis temporomandibularis
M. zygomaticus minor
Pars profunda
Pars superficialis
Masseter
M. zygomaticus major
Ductus parotideus (Stenonis)
Levator anguli oris
Bucinator
M. orbicularis oris
M. mentalis
Depressor labii inferioris
Depressor anguli oris
M. temporalis
Insertio m. temporalis (to Proc. coronoideus and Ramus mandibulae)
Ductus parotideus (Stenonis)
Bucinator
M. orbicularis oris
M. pterygoideus lateralis
N. massetericus; A. masseterica
A. maxillaris
Insertio masseteris

See also Plates 55, 59

Lateral view


Discus articulationis temporomandibularis
Tuberculum articulare
Capita superius and inferius m. pterygoidei lateralis
Lig. sphenomandibulare
M. pterygoideus medialis
Ductus parotideus (Stenonis)
Bucinator
Raphe pterygomandibularis
Constrictor superior pharyngis

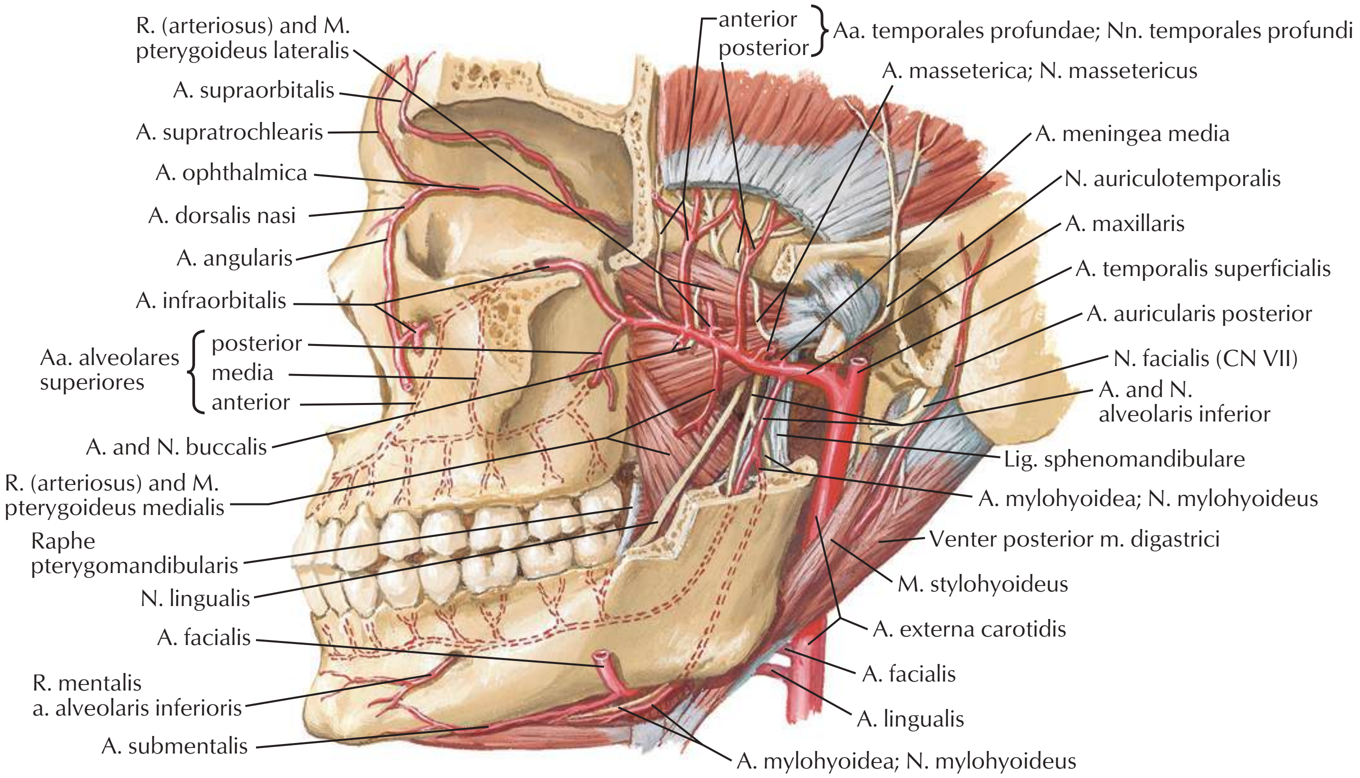
Posterior view


Lig. sphenomandibulare
Ganglion oticum
A. interna carotidis
Choanae
Cartilago tubae auditivae
N. massetericus
A. meningea media
N. auriculotemporalis
A. masseterica
N. pterygoideus medialis
A. maxillaris
N. alveolaris inferior
N. lingualis
M. pterygoideus medialis
Lamina medialis proc. pterygoidei
Hamulus pterygoideus
N. mylohyoideus
Foramen ovale
Lamina lateralis proc. pterygoidei
Articulatio temporomandibularis
Capita superior and inferior m. pterygoidei lateralis
M. pterygoideus medialis
Tensor veli palatini (*cut*)
Levator veli palatini (*cut*)
Hamulus pterygoideus

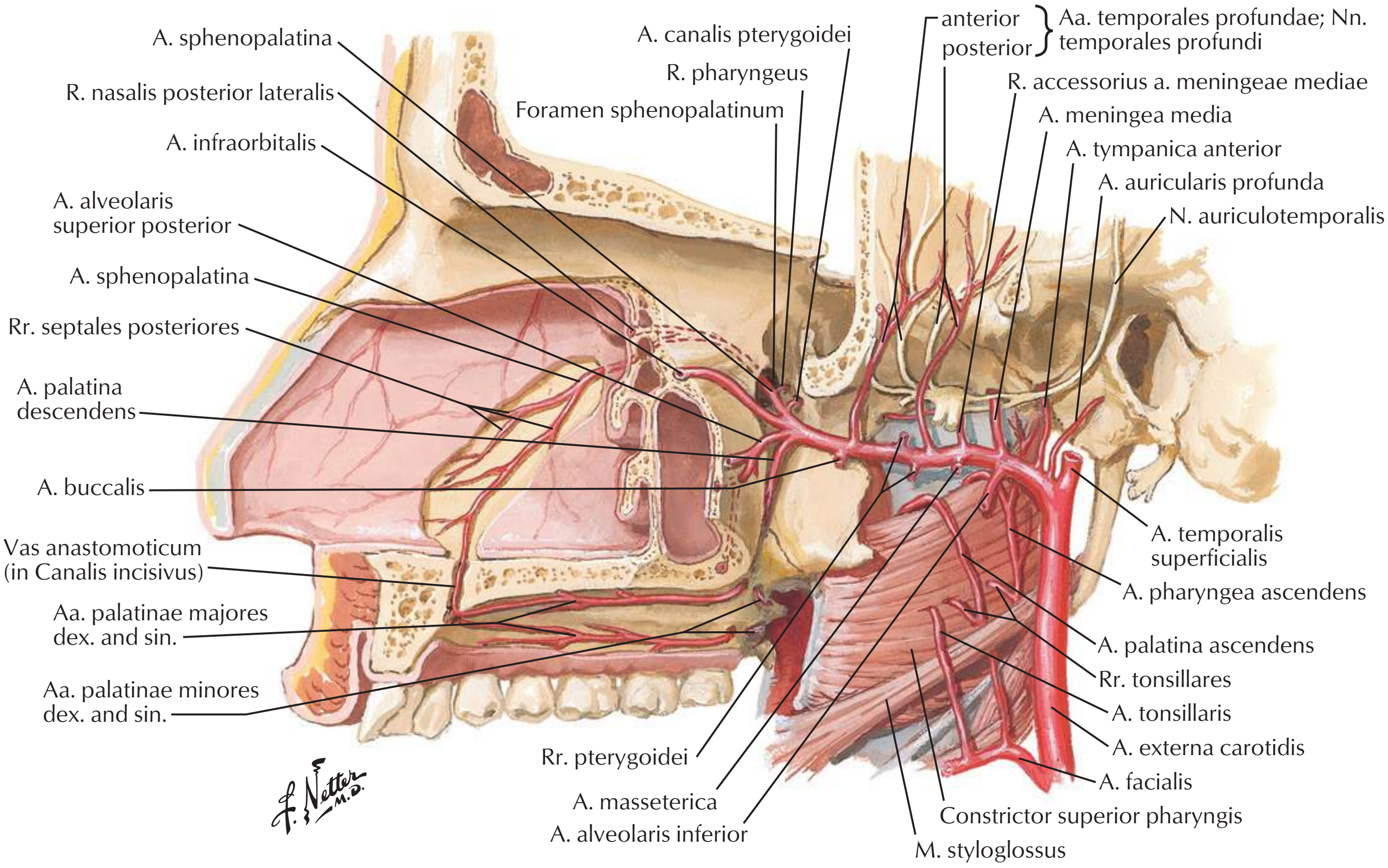
F. Netter M.D.

Maxillary Artery

See also Plates 63, 83



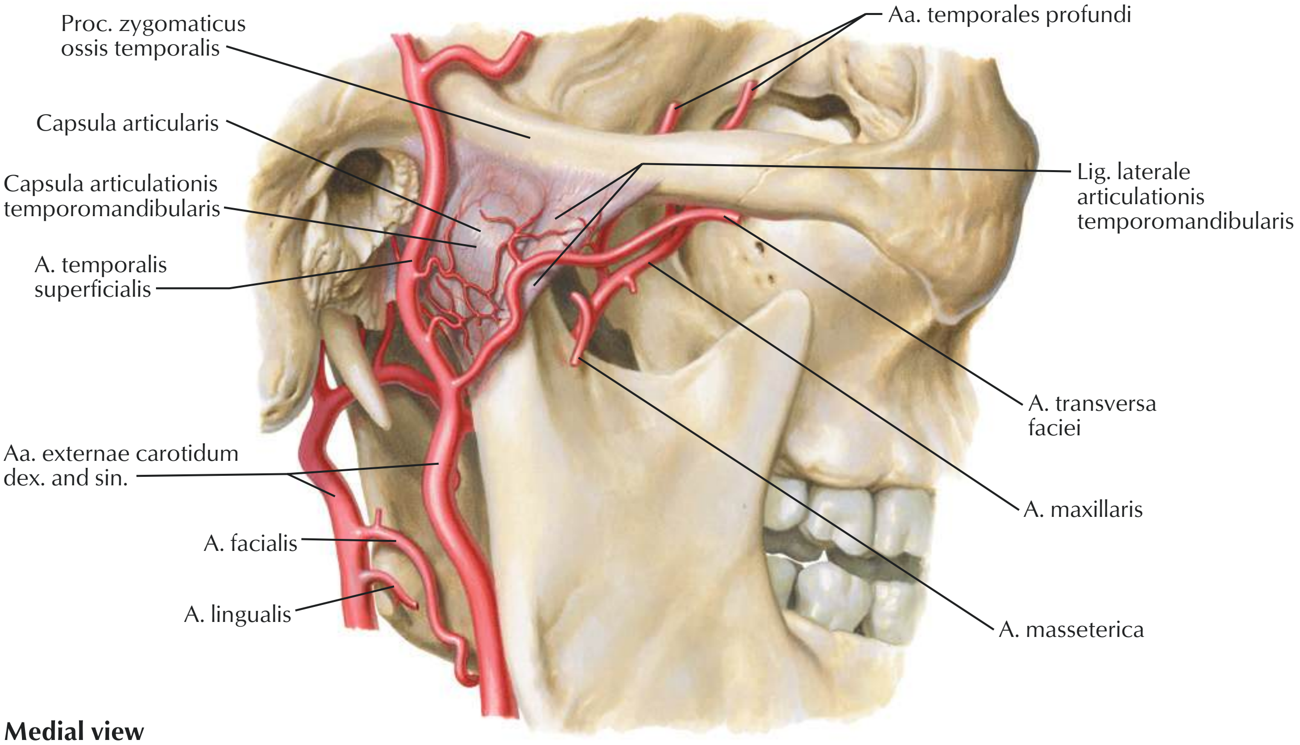
R. (arteriosus) and M. pterygoideus lateralis
A. supraorbitalis
A. supratrochlearis
A. ophthalmica
A. dorsalis nasi
A. angularis
A. infraorbitalis
Aa. alveolares superiores
posterior
media
anterior
A. and N. buccalis
R. (arteriosus) and M. pterygoideus medialis
Raphe pterygomandibularis
N. lingualis
A. facialis
R. mentalis a. alveolaris inferioris
A. submentalis
anterior
posterior
Aa. temporales profundae; Nn. temporales profundi
A. masseterica; N. massetericus
A. meningea media
N. auriculotemporalis
A. maxillaris
A. temporalis superficialis
A. auricularis posterior
N. facialis (CN VII)
A. and N. alveolaris inferior
Lig. sphenomandibulare
A. mylohyoidea; N. mylohyoideus
Venter posterior m. digastrici
M. stylohyoideus
A. externa carotidis
A. facialis
A. lingualis
A. mylohyoidea; N. mylohyoideus



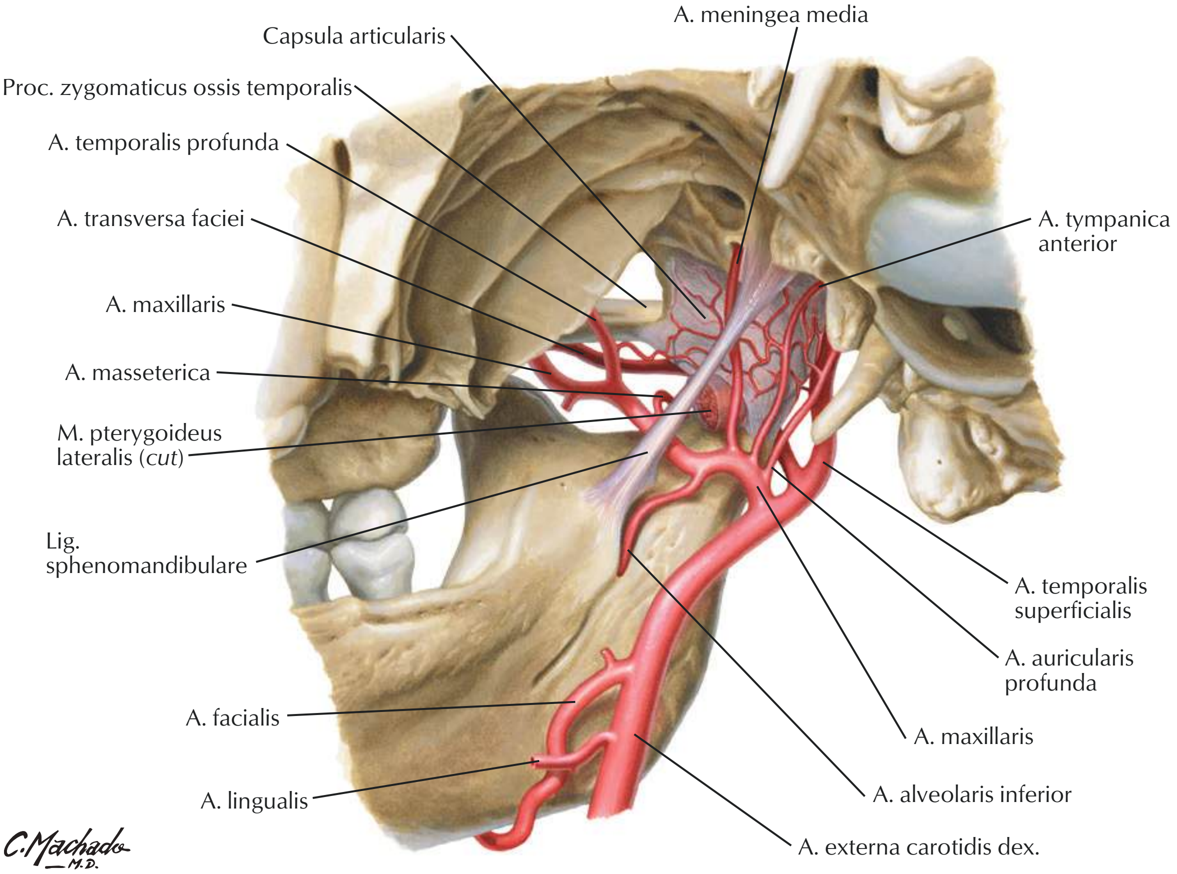
A. sphenopalatina
R. nasalis posterior lateralis
A. infraorbitalis
A. alveolaris superior posterior
A. sphenopalatina
Rr. septales posteriores
A. palatina descendens
A. buccalis
Vas anastomoticum (in Canalis incisivus)
Aa. palatinae majores dex. and sin.
Aa. palatinae minores dex. and sin.
A. canalis pterygoidei
R. pharyngeus
Foramen sphenopalatinum
anterior
posterior
Aa. temporales profundae; Nn. temporales profundi
R. accessorius a. meningeae mediae
A. meningea media
A. tympanica anterior
A. auricularis profunda
N. auriculotemporalis
A. temporalis superficialis
A. pharyngea ascendens
A. palatina ascendens
Rr. tonsillares
A. tonsillaris
A. externa carotidis
A. facialis
Constrictor superior pharyngis
M. styloglossus
Rr. pterygoidei
A. masseterica
A. alveolaris inferior

See also Plates 57, 59, 63

Lateral view


Proc. zygomaticus ossis temporalis
Capsula articularis
Capsula articulationis temporomandibularis
A. temporalis superficialis
Aa. externae carotidum dex. and sin.
A. facialis
A. lingualis
Aa. temporales profundi
Lig. laterale articulationis temporomandibularis
A. transversa faciei
A. maxillaris
A. masseterica

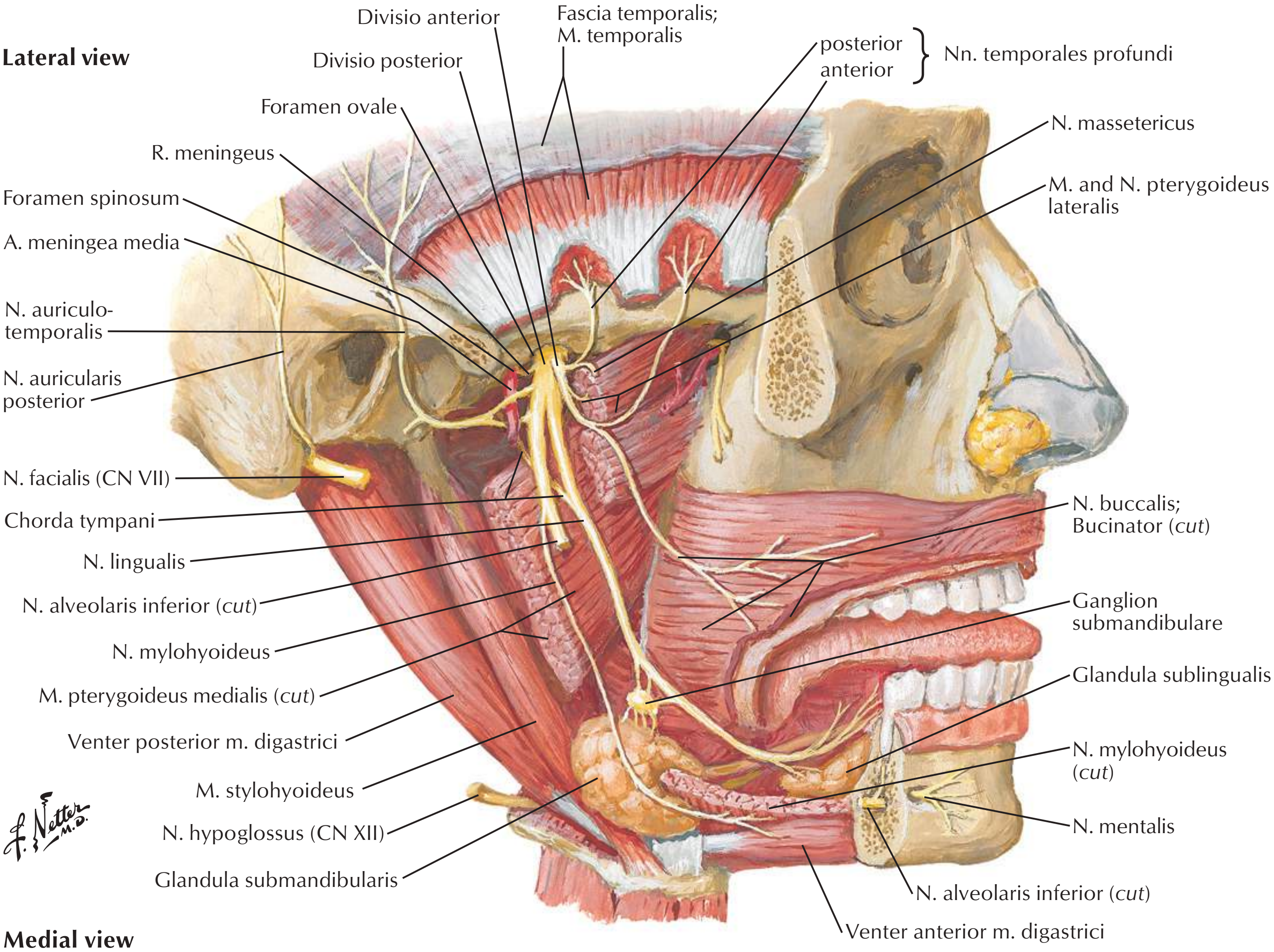
Medial view


Capsula articularis
Proc. zygomaticus ossis temporalis
A. temporalis profunda
A. transversa faciei
A. maxillaris
A. masseterica
M. pterygoideus lateralis (cut)
Lig. sphenomandibulare
A. facialis
A. lingualis
A. meningea media
A. tympanica anterior
A. temporalis superficialis
A. auricularis profunda
A. maxillaris
A. alveolaris inferior
A. externa carotidis dex.
C.Machado M.D.

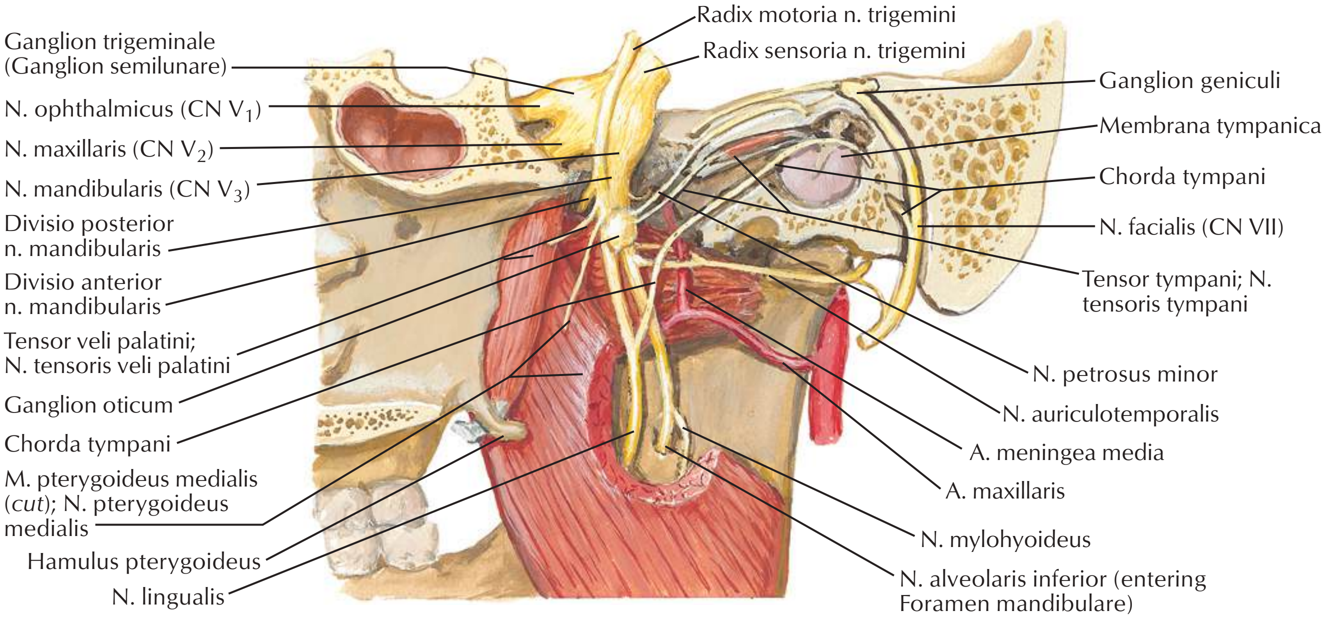
Mandibular Nerve (CN V_3)

See also Plates 82, 133

Lateral view

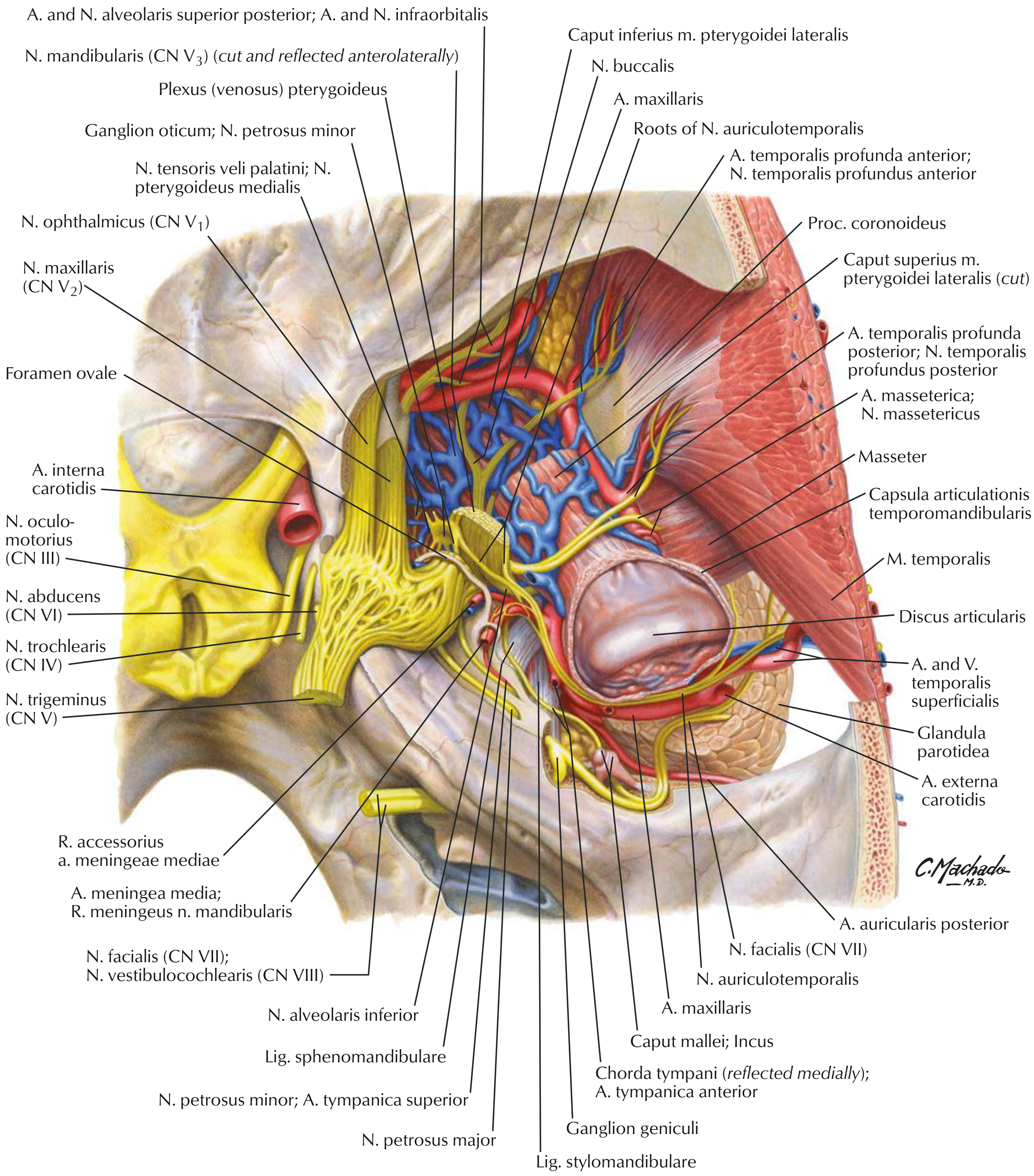

Divisio anterior
Fascia temporalis;
M. temporalis
Divisio posterior
posterior
anterior
Nn. temporales profundi
Foramen ovale
R. meningeus
Foramen spinosum
A. meningea media
N. auriculo-
temporalis
N. auricularis
posterior
N. facialis (CN VII)
Chorda tympani
N. lingualis
N. alveolaris inferior (*cut*)
N. mylohyoideus
M. pterygoideus medialis (*cut*)
Venter posterior m. digastrici
M. stylohyoideus
N. hypoglossus (CN XII)
Glandula submandibularis
N. massetericus
M. and N. pterygoideus
lateralis
N. buccalis;
Bucinator (*cut*)
Ganglion
submandibulare
Glandula sublingualis
N. mylohyoideus
(*cut*)
N. mentalis
N. alveolaris inferior (*cut*)
Venter anterior m. digastrici

Medial view


Radix motoria n. trigemini
Radix sensoria n. trigemini
Ganglion trigeminale
(Ganglion semilunare)
N. ophthalmicus (CN V_1)
N. maxillaris (CN V_2)
N. mandibularis (CN V_3)
Divisio posterior
n. mandibularis
Divisio anterior
n. mandibularis
Tensor veli palatini;
N. tensoris veli palatini
Ganglion oticum
Chorda tympani
M. pterygoideus medialis
(*cut*); N. pterygoideus
medialis
Hamulus pterygoideus
N. lingualis
Ganglion geniculi
Membrana tympanica
Chorda tympani
N. facialis (CN VII)
Tensor tympani; N.
tensoris tympani
N. petrosus minor
N. auriculotemporalis
A. meningea media
A. maxillaris
N. mylohyoideus
N. alveolaris inferior (entering
Foramen mandibulare)

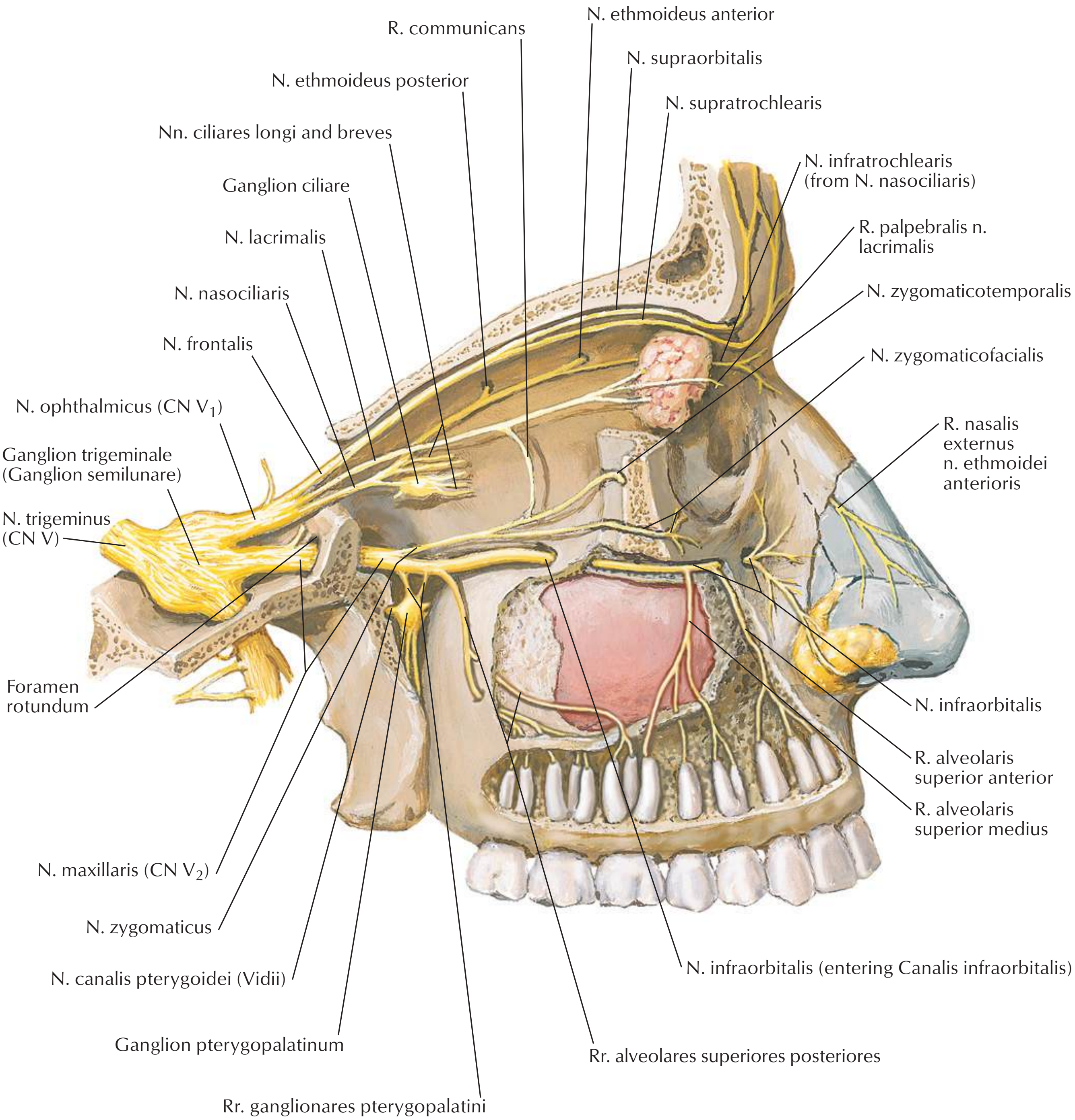
Superior View of Infratemporal Fossa

See also Plates 57-59, 63, 64, 115


A. and N. alveolaris superior posterior; A. and N. infraorbitalis
N. mandibularis (CN V_3) (*cut and reflected anterolaterally*)
Plexus (venosus) pterygoideus
Ganglion oticum; N. petrosus minor
N. tensoris veli palatini; N. pterygoideus medialis
N. ophthalmicus (CN V_1)
N. maxillaris (CN V_2)
Foramen ovale
A. interna carotidis
N. oculomotorius (CN III)
N. abducens (CN VI)
N. trochlearis (CN IV)
N. trigeminus (CN V)
R. accessorius a. meningeae mediae
A. meningea media; R. meningeus n. mandibularis
N. facialis (CN VII); N. vestibulocochlearis (CN VIII)
N. alveolaris inferior
Lig. sphenomandibulare
N. petrosus minor; A. tympanica superior
N. petrosus major
Lig. stylomandibulare
Ganglion geniculi
Chorda tympani (*reflected medially*); A. tympanica anterior
Caput mallei; Incus
A. maxillaris
N. auriculotemporalis
N. facialis (CN VII)
A. auricularis posterior
Caput inferius m. pterygoidei lateralis
N. buccalis
A. maxillaris
Roots of N. auriculotemporalis
A. temporalis profunda anterior; N. temporalis profundus anterior
Proc. coronoideus
Caput superius m. pterygoidei lateralis (*cut*)
A. temporalis profunda posterior; N. temporalis profundus posterior
A. masseterica; N. massetericus
Masseter
Capsula articulationis temporomandibularis
M. temporalis
Discus articularis
A. and V. temporalis superficialis
Glandula parotidea
A. externa carotidis
C. Machado M.D.

Ophthalmic (CN V_1) and Maxillary (CN V_2) Nerves

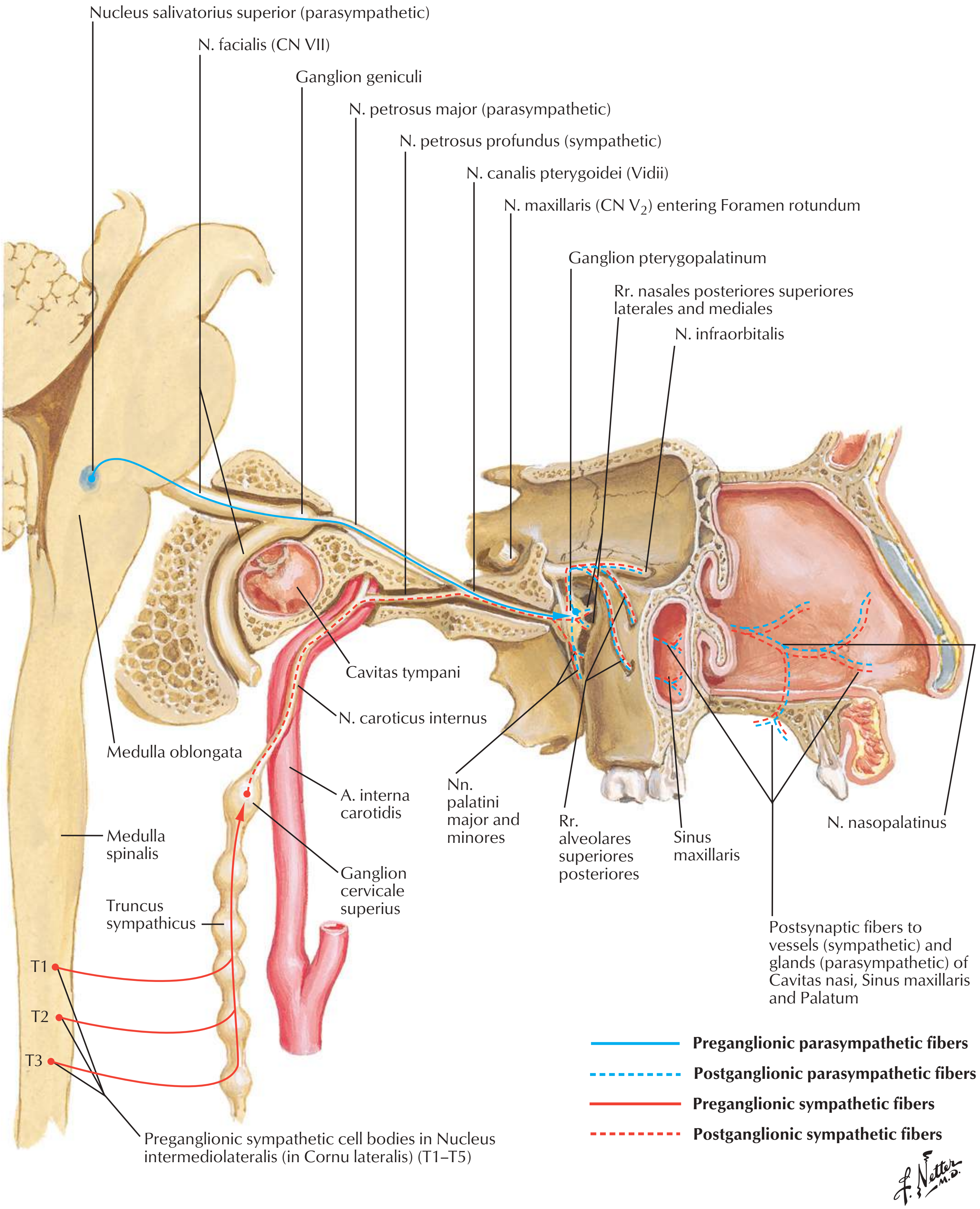
See also Plates 63, 66



R. communicans
N. ethmoideus anterior
N. supraorbitalis
N. ethmoideus posterior
N. supratrochlearis
Nn. ciliares longi and breves
N. infratrochlearis (from N. nasociliaris)
Ganglion ciliare
R. palpebralis n. lacrimalis
N. lacrimalis
N. zygomaticotemporalis
N. nasociliaris
N. frontalis
N. zygomaticofacialis
N. ophthalmicus (CN V1)
R. nasalis externus n. ethmoidei anterioris
Ganglion trigeminale (Ganglion semilunare)
N. trigeminus (CN V)
Foramen rotundum
N. infraorbitalis
R. alveolaris superior anterior
R. alveolaris superior medius
N. maxillaris (CN V2)
N. zygomaticus
N. canalis pterygoidei (Vidii)
N. infraorbitalis (entering Canalis infraorbitalis)
Ganglion pterygopalatinum
Rr. alveolares superiores posteriores
Rr. ganglionares pterygopalatini

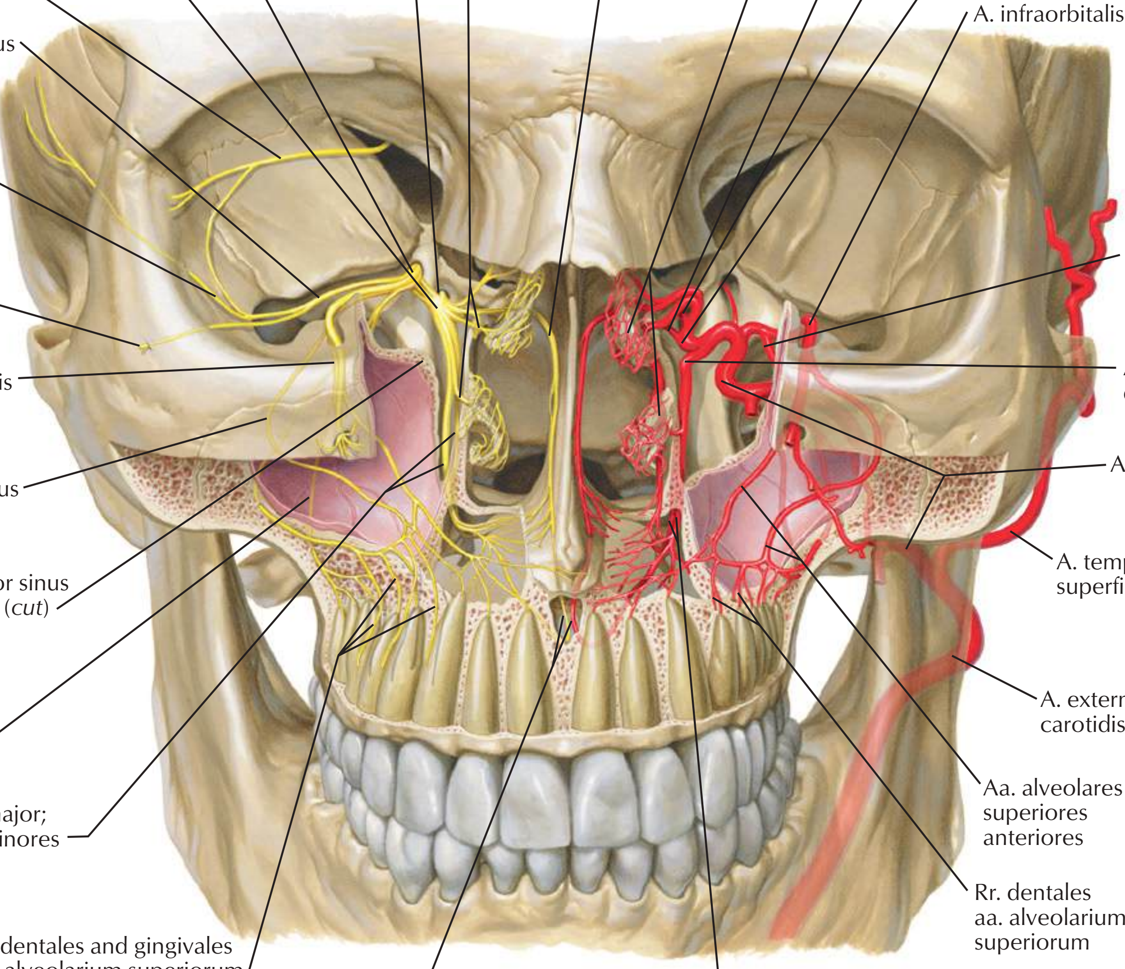
Autonomic Innervation of Nasal Cavity

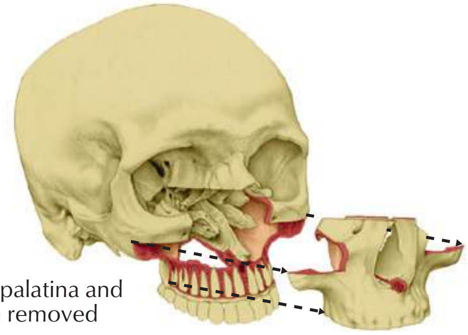
See also Plates 133, 142, 144


Nucleus salivatorius superior (parasympathetic)
N. facialis (CN VII)
Ganglion geniculi
N. petrosus major (parasympathetic)
N. petrosus profundus (sympathetic)
N. canalis pterygoidei (Vidii)
N. maxillaris (CN V_2) entering Foramen rotundum
Ganglion pterygopalatinum
Rr. nasales posteriores superiores laterales and mediales
N. infraorbitalis
Cavitas tympani
N. caroticus internus
Medulla oblongata
A. interna carotidis
Nn. palatini major and minores
Rr. alveolares superiores posteriores
Sinus maxillaris
N. nasopalatinus
Medulla spinalis
Ganglion cervicale superius
Truncus sympathicus
T1
T2
T3
Postsynaptic fibers to vessels (sympathetic) and glands (parasympathetic) of Cavitas nasi, Sinus maxillaris and Palatum
Preganglionic sympathetic cell bodies in Nucleus intermediolateralis (in Cornu lateralis) (T1–T5)
Preganglionic parasympathetic fibers
Postganglionic parasympathetic fibers
Preganglionic sympathetic fibers
Postganglionic sympathetic fibers
F. Netter M.D.

Nerves and Arteries of the Deep Face

See also Plates 46, 48, 61

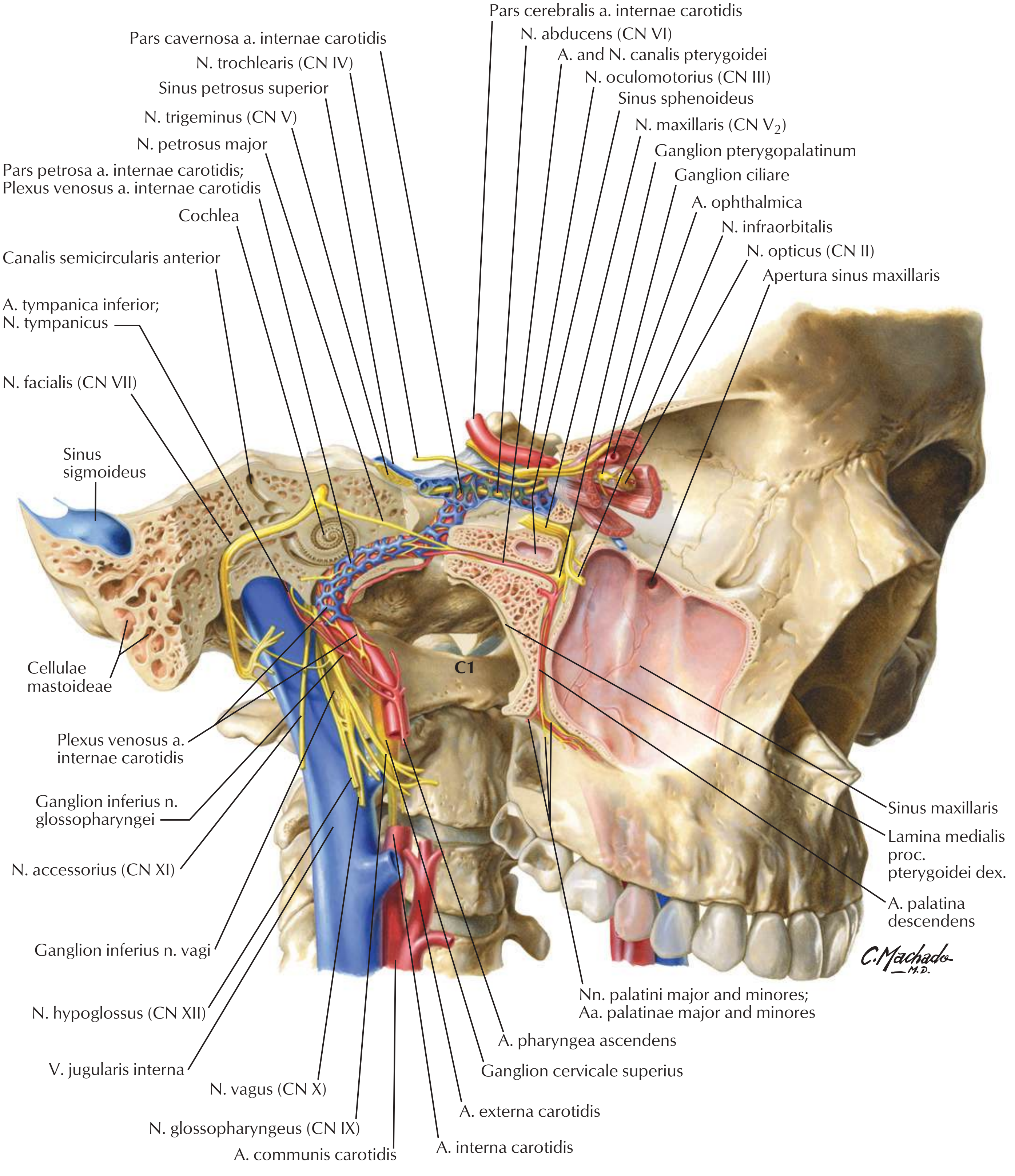

N. canalis pterygoidei
Rr. nasales posteriores superiores laterales and inferiores
N. nasopalatinus
Rr. nasales posteriores laterales a. sphenopalatinae
N. maxillaris (CN V_2)
R. pharyngeus a. canalis pterygoidei
Ganglion pterygopalatinum
A. canalis pterygoidei
N. lacrimalis
A. sphenopalatina
A. infraorbitalis
N. zygomaticus
N. zygomaticotemporalis
N. zygomaticofacialis
A. alveolaris superior posterior
N. infraorbitalis
A. palatina descendens
R. alveolaris superior medius
A. maxillaris
Paries posterior sinus maxillaris dex. (*cut*)
A. temporalis superficialis
R. alveolaris superior posterior
A. externa carotidis
N. palatinus major; Nn. palatini minores
Aa. alveolares superiores anteriores
Rr. dentales aa. alveolarium superiorum
Rr. dentales and gingivales nn. alveolarium superiorum
A. palatina major; Aa. palatinae minores
Communication in Canalis incisivus between Nn. palatinus major and nasopalatinus, and anastomosis between A. palatina major and R. septalis posterior a. sphenopalatinae

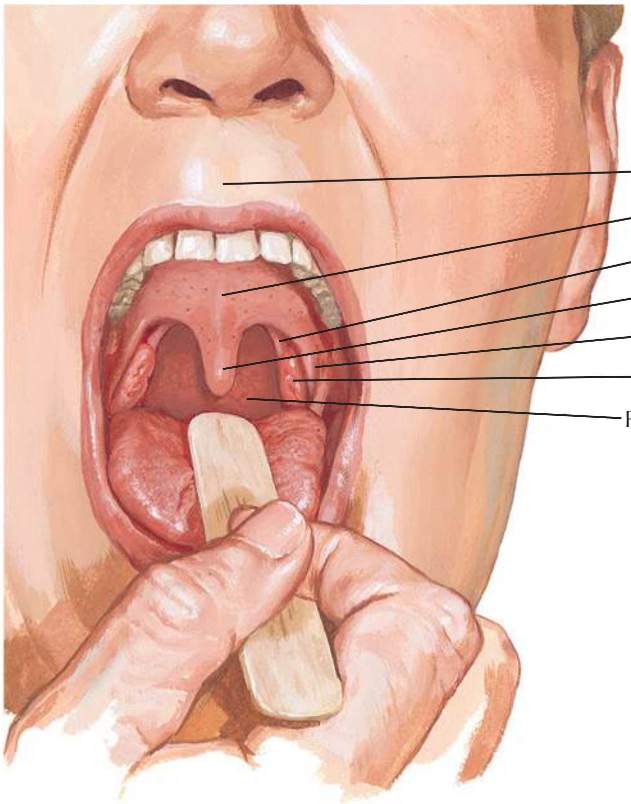


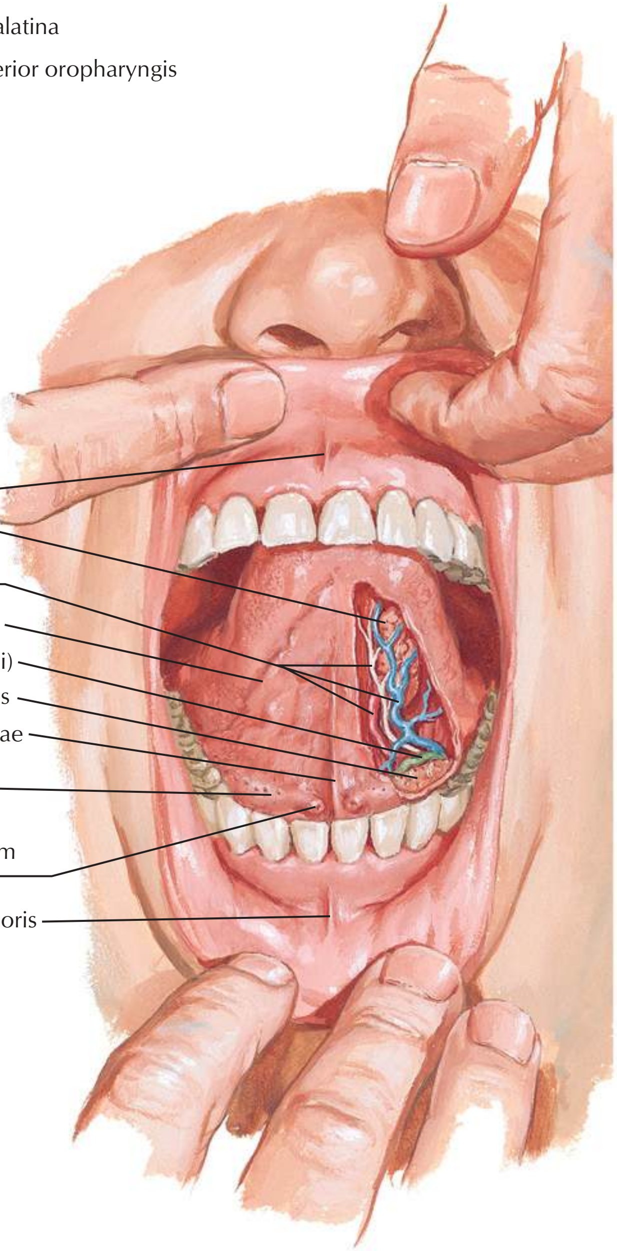
Anterior perspective of fossa pterygopalatina and cavitas nasi with lower facial skeleton removed

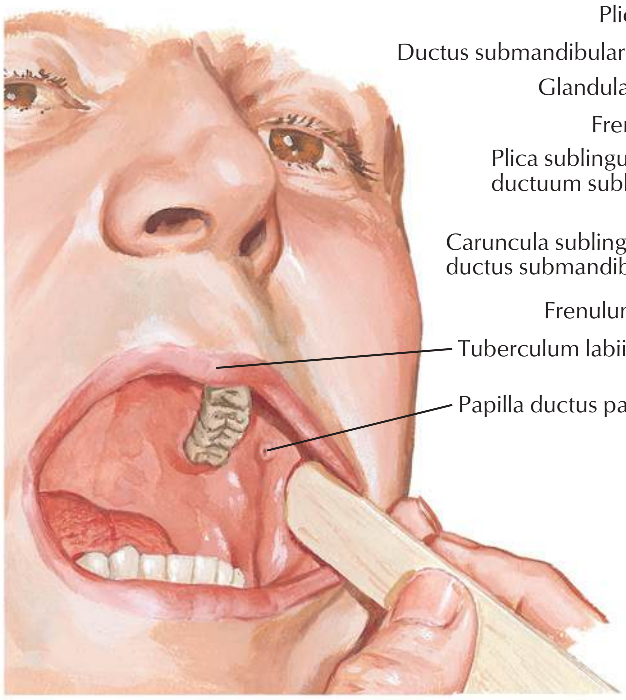
C. Machado M.D.

See also Plates 115, 142, 147


Pars cerebralis a. internae carotidis
N. abducens (CN VI)
A. and N. canalis pterygoidei
N. oculomotorius (CN III)
Sinus sphenoideus
N. maxillaris (CN V_2)
Ganglion pterygopalatinum
Ganglion ciliare
A. ophthalmica
N. infraorbitalis
N. opticus (CN II)
Apertura sinus maxillaris
Pars cavernosa a. internae carotidis
N. trochlearis (CN IV)
Sinus petrosus superior
N. trigeminus (CN V)
N. petrosus major
Pars petrosa a. internae carotidis;
Plexus venosus a. internae carotidis
Cochlea
Canalis semicircularis anterior
A. tympanica inferior;
N. tympanicus
N. facialis (CN VII)
Sinus sigmoideus
Cellulae mastoideae
C1
Plexus venosus a. internae carotidis
Ganglion inferius n. glossopharyngei
N. accessorius (CN XI)
Ganglion inferius n. vagi
N. hypoglossus (CN XII)
V. jugularis interna
N. vagus (CN X)
N. glossopharyngeus (CN IX)
A. communis carotidis
A. interna carotidis
A. externa carotidis
Ganglion cervicale superius
A. pharyngea ascendens
Nn. palatini major and minores;
Aa. palatinae major and minores
Sinus maxillaris
Lamina medialis proc. pterygoidei dex.
A. palatina descendens
C. Machado M.D.

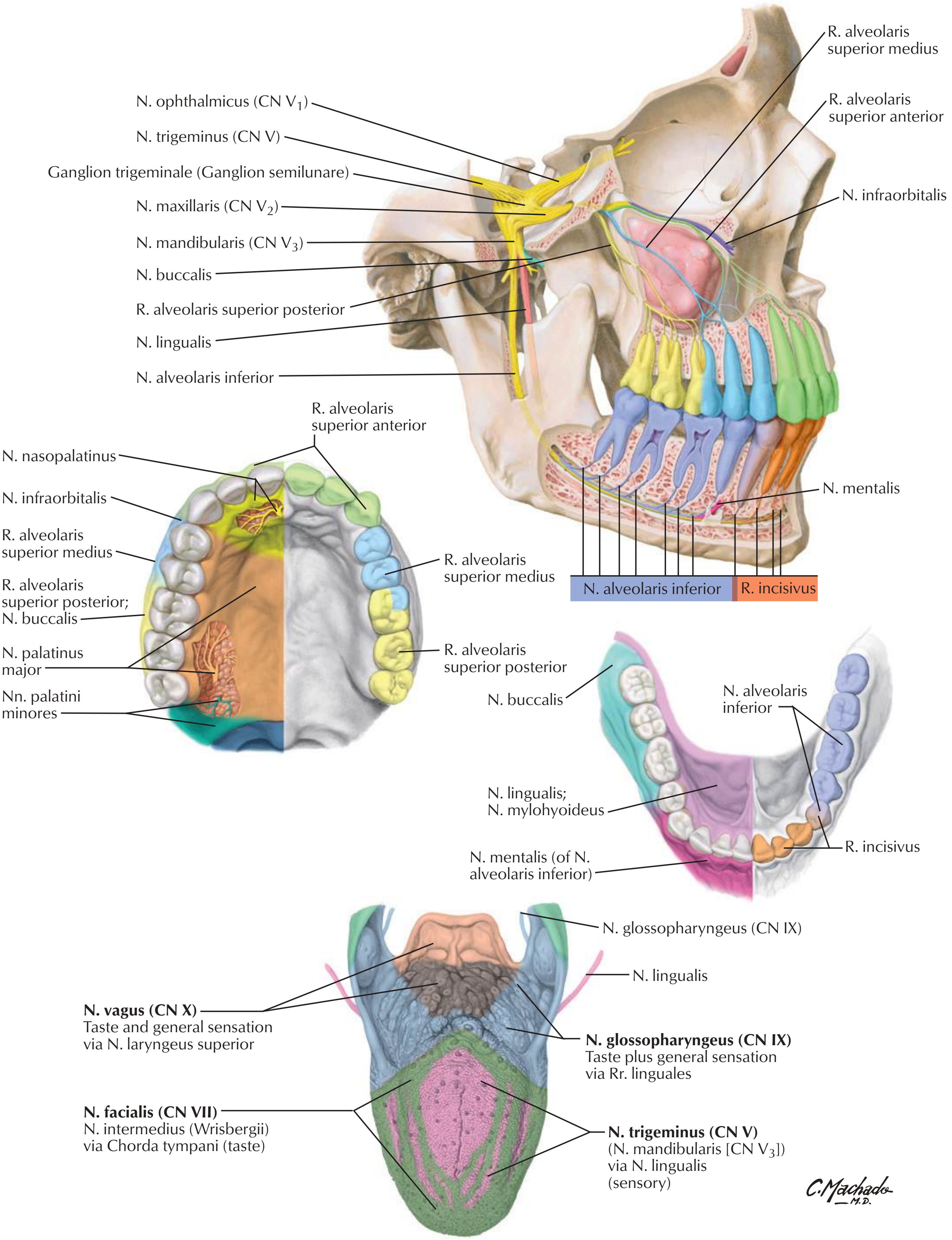

Philtrum
Palatum molle (Velum palatinum)
Arcus palatopharyngeus
Uvula palatina
Arcus palatoglossus
Tonsilla palatina
Paries posterior oropharyngis


Frenulum labii superioris
Glandula salivaria minor lingualis
A. and V. profunda linguae; N. lingualis
Plica fimbriata
Ductus submandibularis (Whartoni)
Glandula sublingualis
Frenulum linguae
Plica sublingualis; Ostia ductuum sublingualium
Caruncula sublingualis; Ostium ductus submandibularis
Frenulum labii inferioris


Tuberculum labii superioris
Papilla ductus parotidei

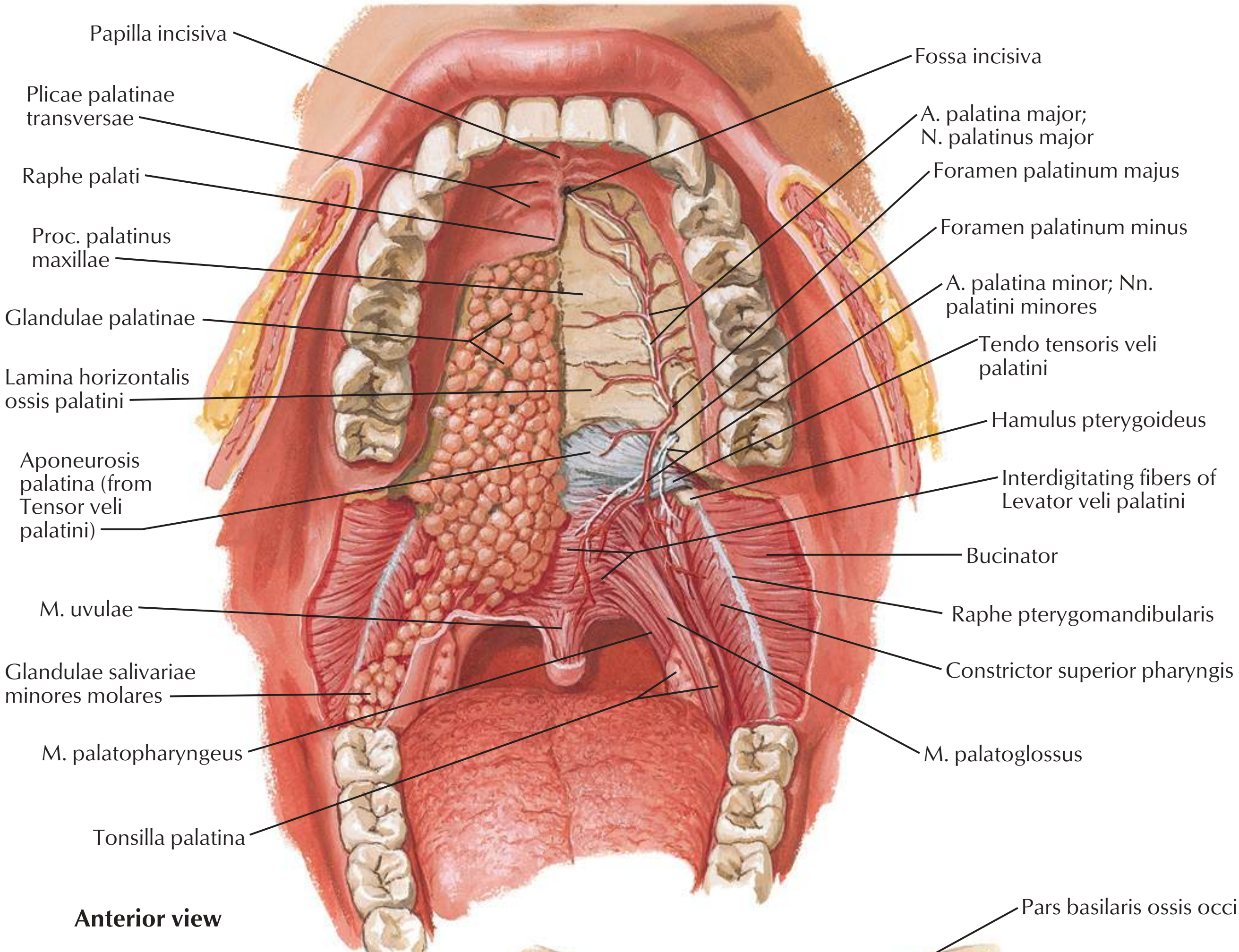
Afferent Innervation of Oral Cavity and Tongue

See also Plates 144, 146


R. alveolaris superior medius
R. alveolaris superior anterior
N. ophthalmicus (CN V_1)
N. trigeminus (CN V)
Ganglion trigeminale (Ganglion semilunare)
N. infraorbitalis
N. maxillaris (CN V_2)
N. mandibularis (CN V_3)
N. buccalis
R. alveolaris superior posterior
N. lingualis
N. alveolaris inferior
R. alveolaris superior anterior
N. nasopalatinus
N. mentalis
N. infraorbitalis
R. alveolaris superior medius
R. alveolaris superior medius
N. alveolaris inferior
R. incisivus
R. alveolaris superior posterior; N. buccalis
R. alveolaris superior posterior
N. palatinus major
N. buccalis
N. alveolaris inferior
Nn. palatini minores
N. lingualis; N. mylohyoideus
R. incisivus
N. mentalis (of N. alveolaris inferior)
N. glossopharyngeus (CN IX)
N. lingualis
N. vagus (CN X)
Taste and general sensation via N. laryngeus superior
N. glossopharyngeus (CN IX)
Taste plus general sensation via Rr. linguales
N. facialis (CN VII)
N. intermedius (Wrisbergii) via Chorda tympani (taste)
N. trigeminus (CN V)
(N. mandibularis [CN V_3]) via N. lingualis (sensory)
C. Machado M.D.

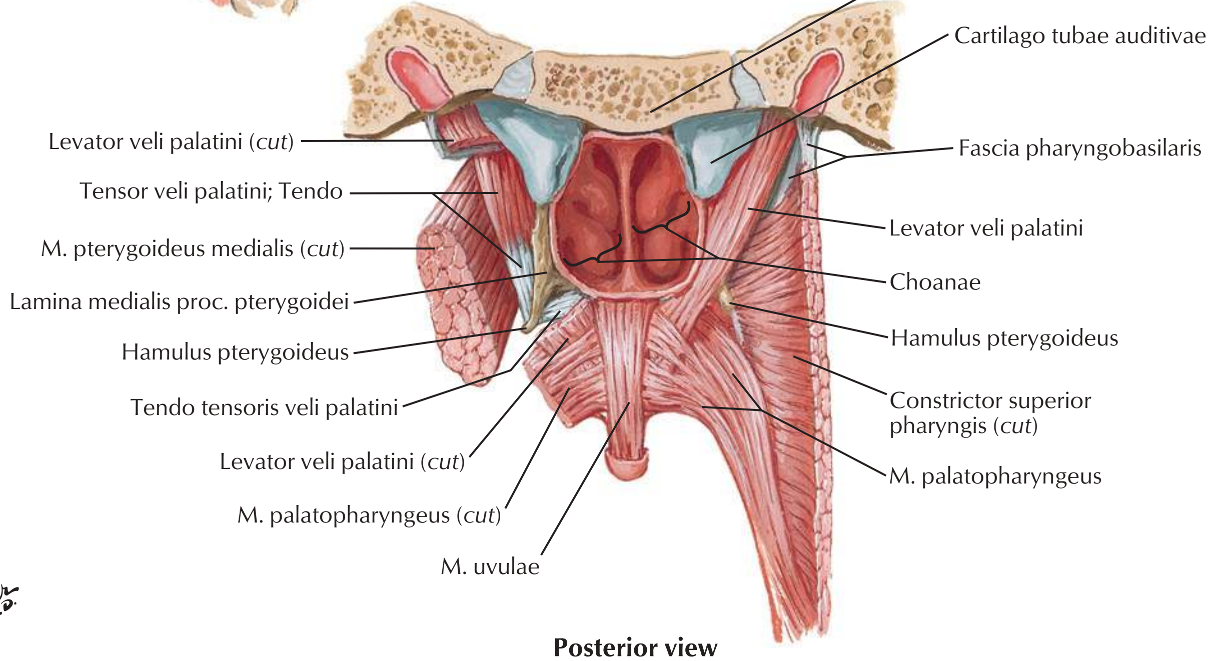
Roof of Oral Cavity

See also **Plate 48**



Papilla incisiva
Plicae palatinae transversae
Raphe palati
Proc. palatinus maxillae
Glandulae palatinae
Lamina horizontalis ossis palatini
Aponeurosis palatina (from Tensor veli palatini)
M. uvulae
Glandulae salivariae minores molares
M. palatopharyngeus
Tonsilla palatina
Fossa incisiva
A. palatina major; N. palatinus major
Foramen palatinum majus
Foramen palatinum minus
A. palatina minor; Nn. palatini minores
Tendo tensoris veli palatini
Hamulus pterygoideus
Interdigitating fibers of Levator veli palatini
Bucinator
Raphe pterygomandibularis
Constrictor superior pharyngis
M. palatoglossus

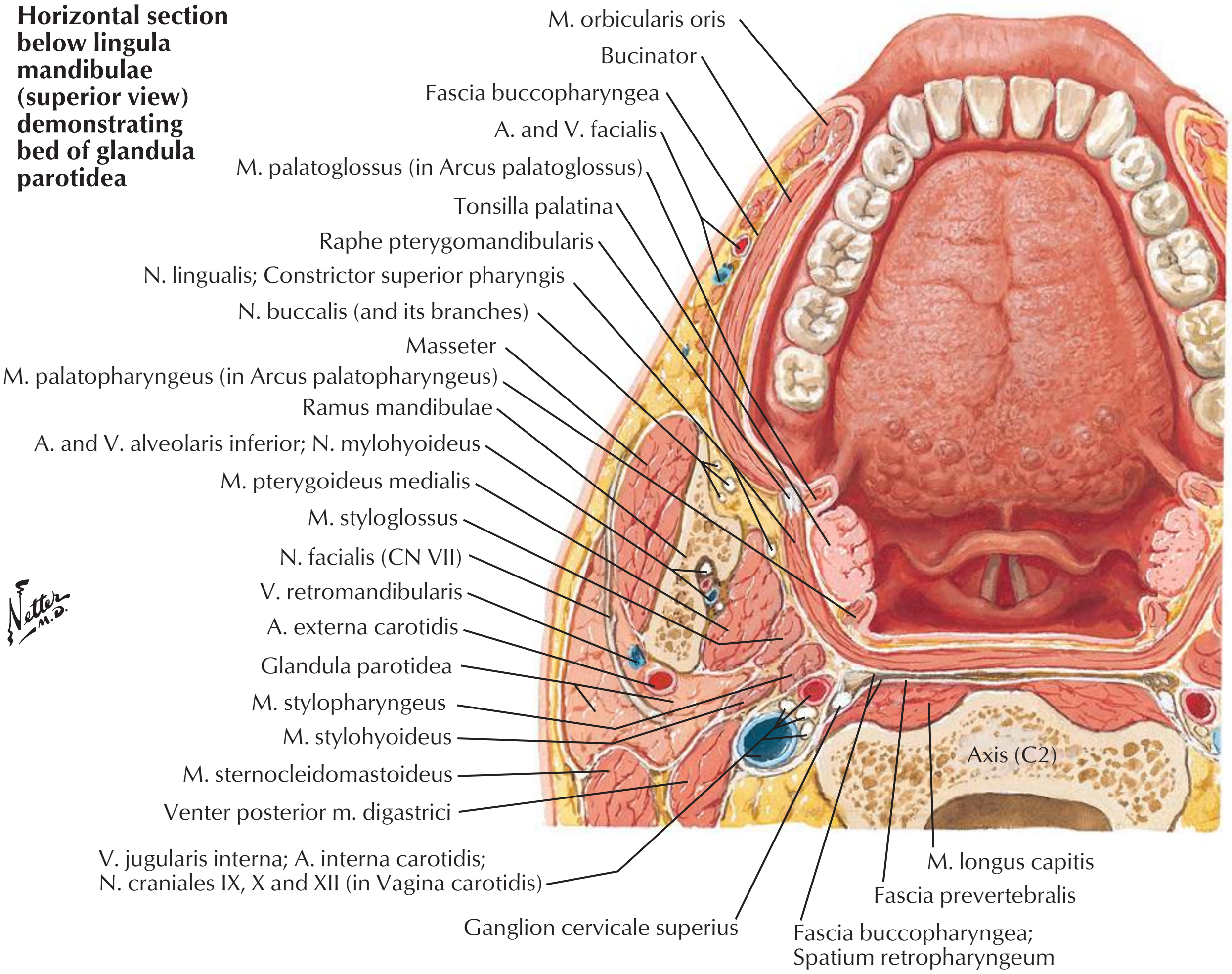
Anterior view

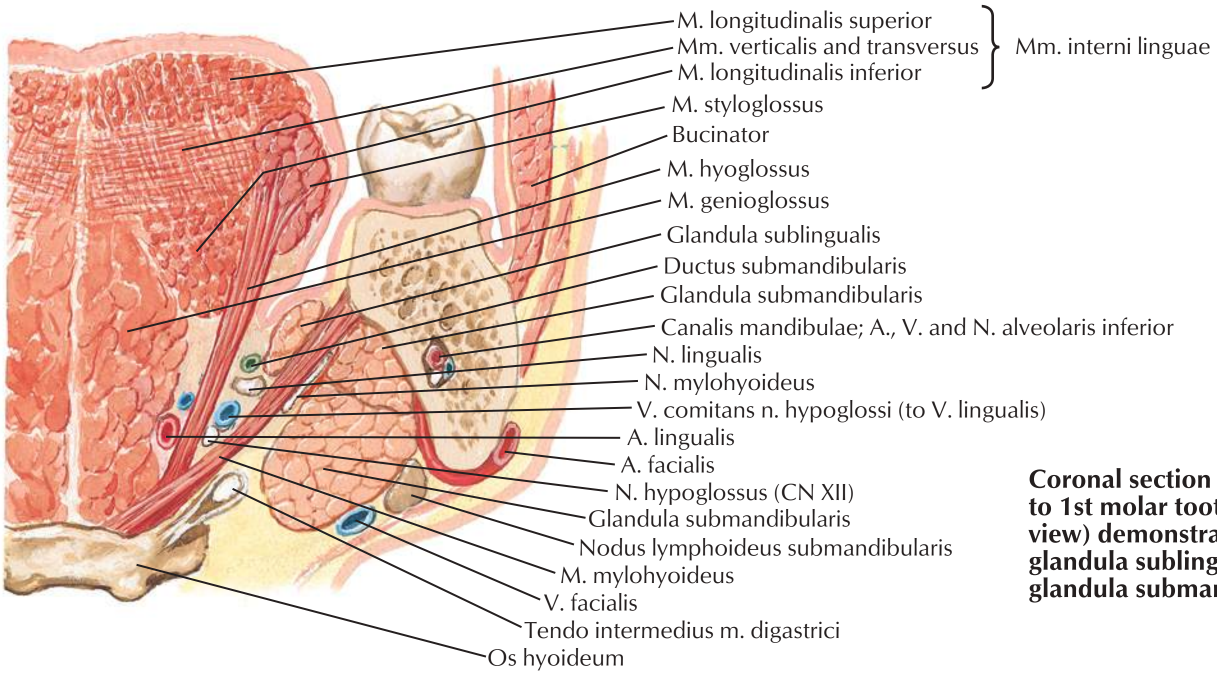


Pars basilaris ossis occipitalis
Cartilago tubae auditivae
Fascia pharyngobasilaris
Levator veli palatini (*cut*)
Tensor veli palatini; Tendo
M. pterygoideus medialis (*cut*)
Lamina medialis proc. pterygoidei
Hamulus pterygoideus
Tendo tensoris veli palatini
Levator veli palatini (*cut*)
M. palatopharyngeus (*cut*)
M. uvulae
Levator veli palatini
Choanae
Hamulus pterygoideus
Constrictor superior pharyngis (*cut*)
M. palatopharyngeus

Posterior view

Horizontal section below lingula mandibulae (superior view) demonstrating bed of glandula parotidea

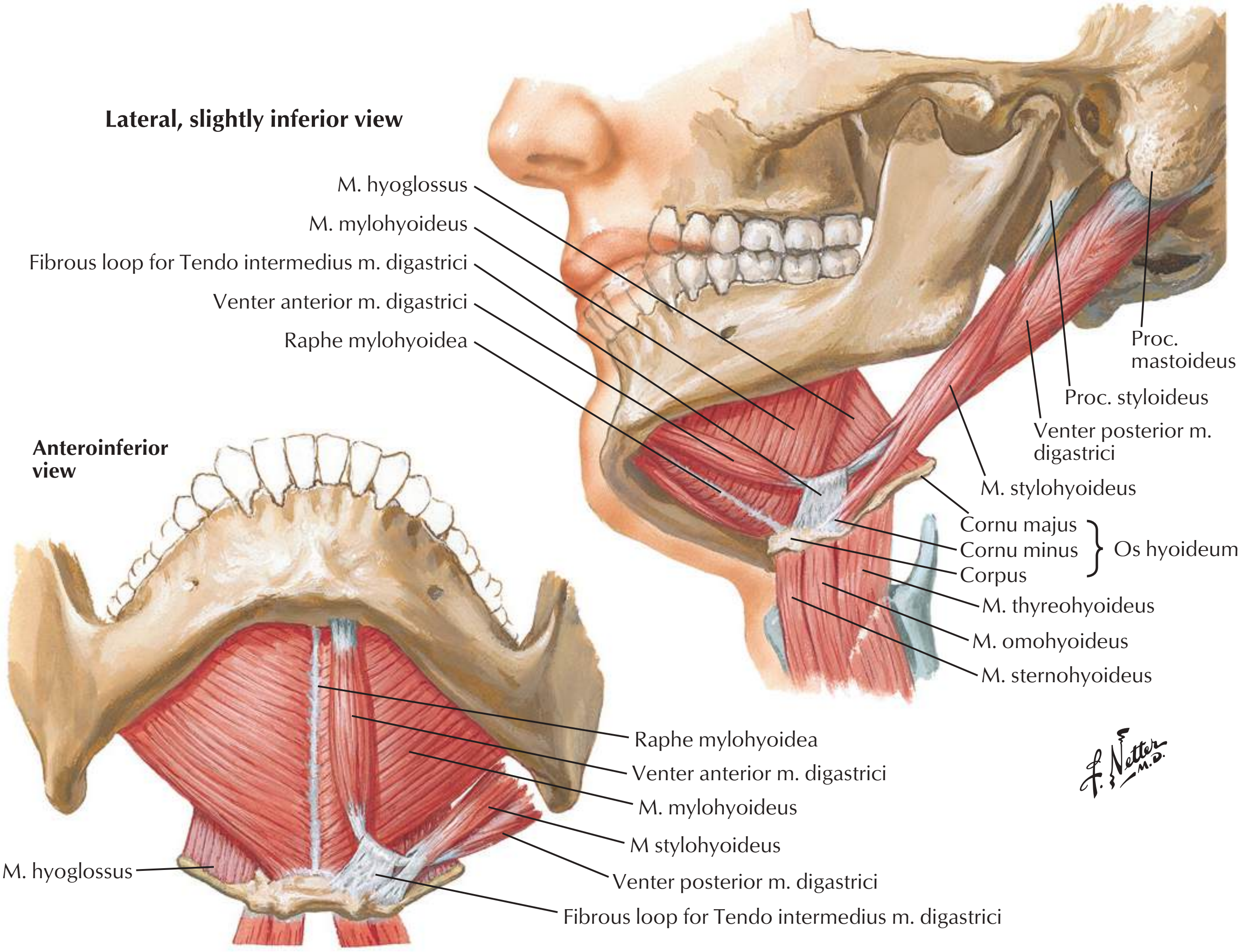

M. orbicularis oris
Bucinator
Fascia buccopharyngea
A. and V. facialis
M. palatoglossus (in Arcus palatoglossus)
Tonsilla palatina
Raphe pterygomandibularis
N. lingualis; Constrictor superior pharyngis
N. buccalis (and its branches)
Masseter
M. palatopharyngeus (in Arcus palatopharyngeus)
Ramus mandibulae
A. and V. alveolaris inferior; N. mylohyoideus
M. pterygoideus medialis
M. styloglossus
N. facialis (CN VII)
V. retromandibularis
A. externa carotidis
Glandula parotidea
M. stylopharyngeus
M. stylohyoideus
M. sternocleidomastoideus
Venter posterior m. digastrici
V. jugularis interna; A. interna carotidis; N. craniales IX, X and XII (in Vagina carotidis)
Ganglion cervicale superius
Axis (C2)
M. longus capitis
Fascia prevertebralis
Fascia buccopharyngea; Spatium retropharyngeum


M. longitudinalis superior
Mm. verticalis and transversus
M. longitudinalis inferior
Mm. interni linguae
M. styloglossus
Bucinator
M. hyoglossus
M. genioglossus
Glandula sublingualis
Ductus submandibularis
Glandula submandibularis
Canalis mandibulae; A., V. and N. alveolaris inferior
N. lingualis
N. mylohyoideus
V. comitans n. hypoglossi (to V. lingualis)
A. lingualis
A. facialis
N. hypoglossus (CN XII)
Glandula submandibularis
Nodus lymphoideus submandibularis
M. mylohyoideus
V. facialis
Tendo intermedius m. digastrici
Os hyoideum

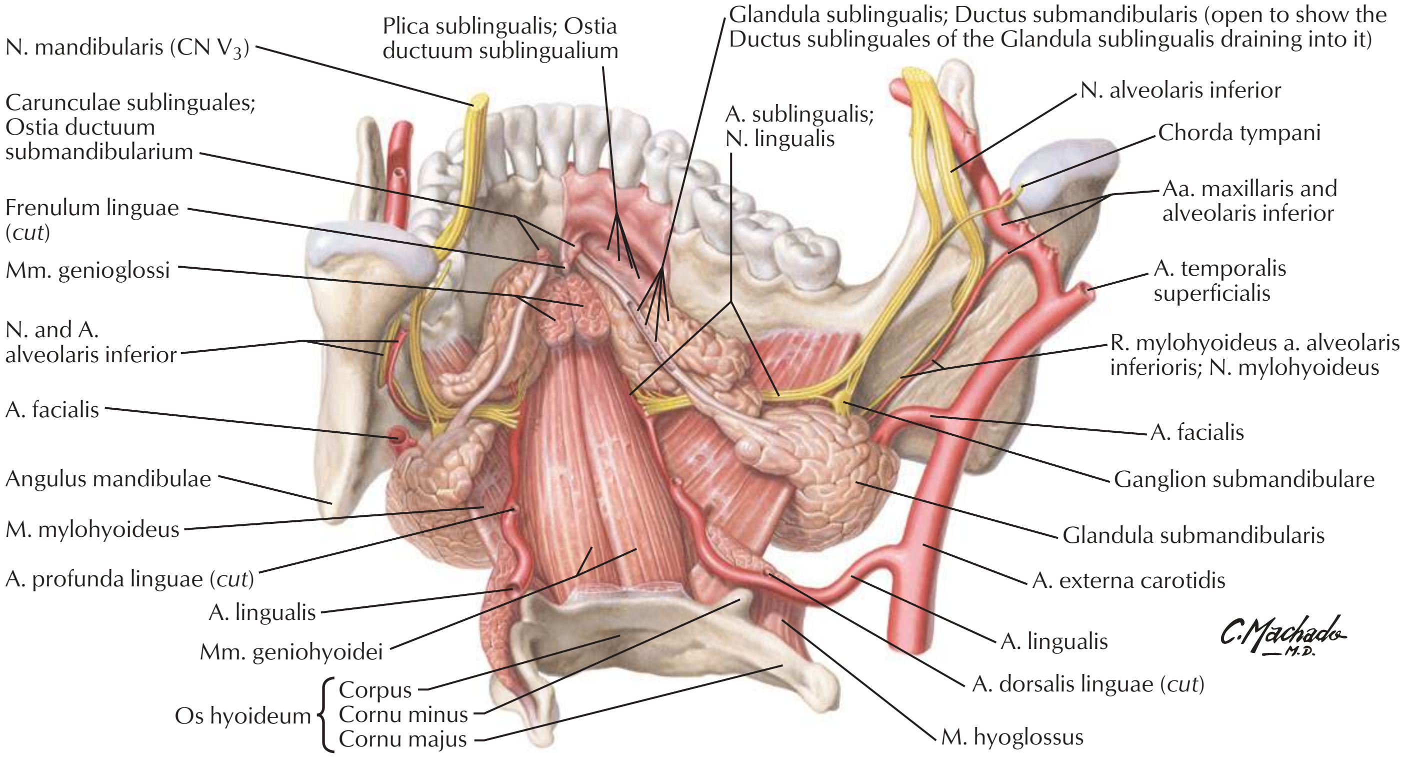
Coronal section posterior to 1st molar tooth (anterior view) demonstrating glandula sublingualis and glandula submandibularis

Floor of Oral Cavity

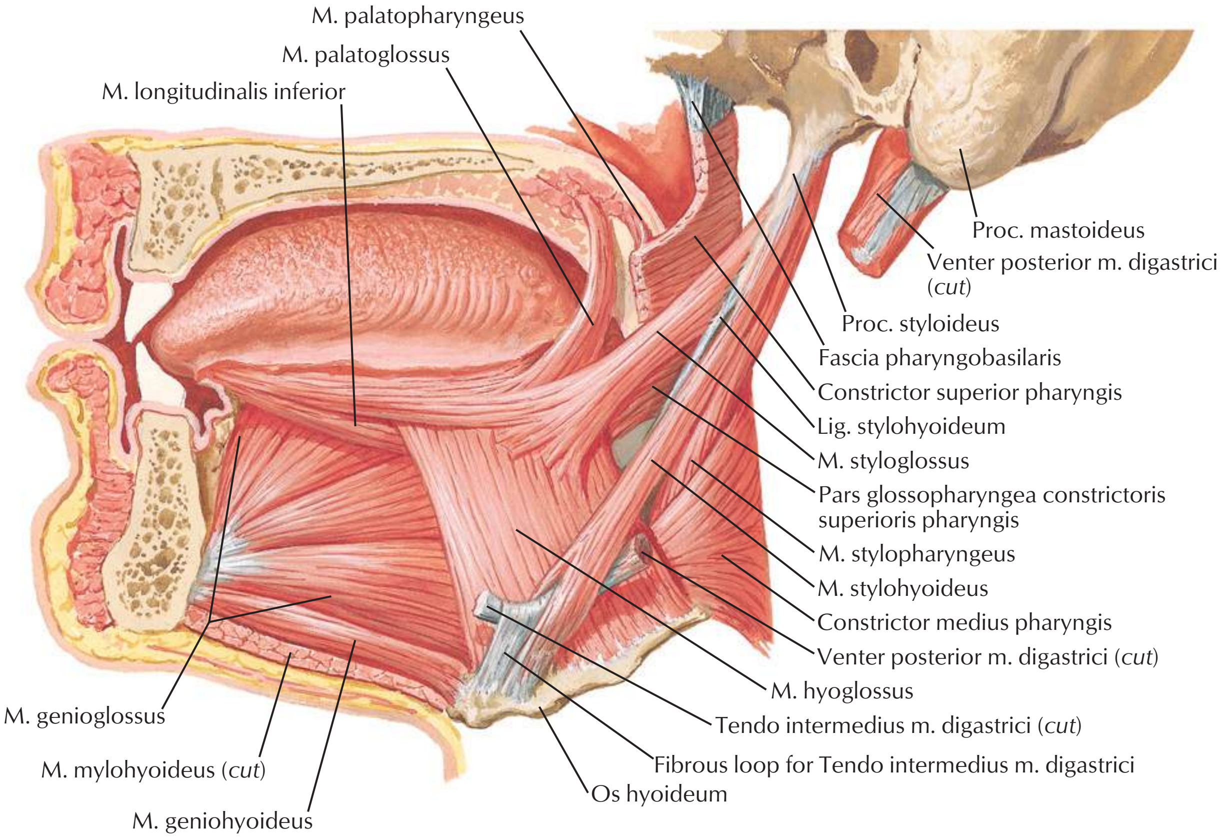
See also Plate 35


Lateral, slightly inferior view

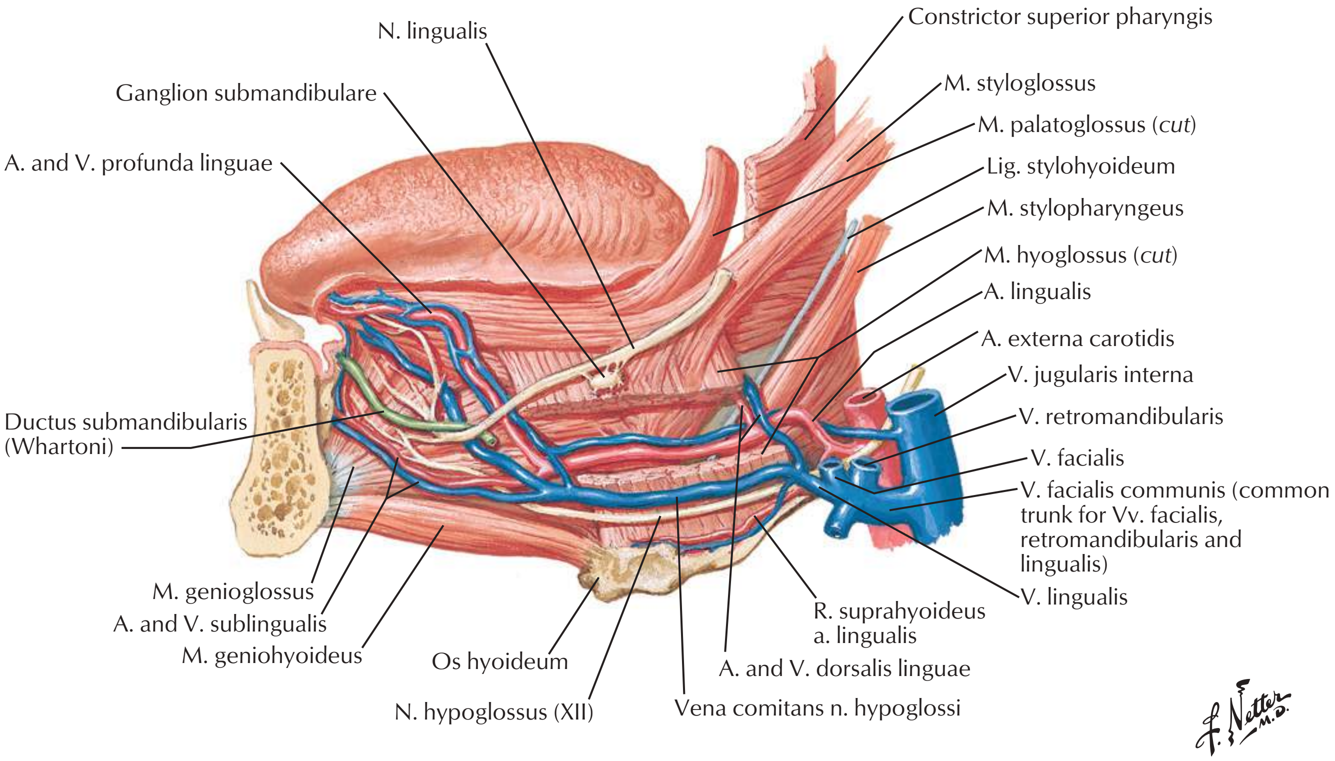
Anteroinferior view
M. hyoglossus
M. mylohyoideus
Fibrous loop for Tendo intermedius m. digastrici
Venter anterior m. digastrici
Raphe mylohyoidea
Proc. mastoideus
Proc. styloideus
Venter posterior m. digastrici
M. stylohyoideus
Cornu majus
Cornu minus
Corpus
Os hyoideum
M. thyreohyoideus
M. omohyoideus
M. sternohyoideus
Raphe mylohyoidea
Venter anterior m. digastrici
M. mylohyoideus
M stylohyoideus
Venter posterior m. digastrici
Fibrous loop for Tendo intermedius m. digastrici
M. hyoglossus
F. Netter M.D.

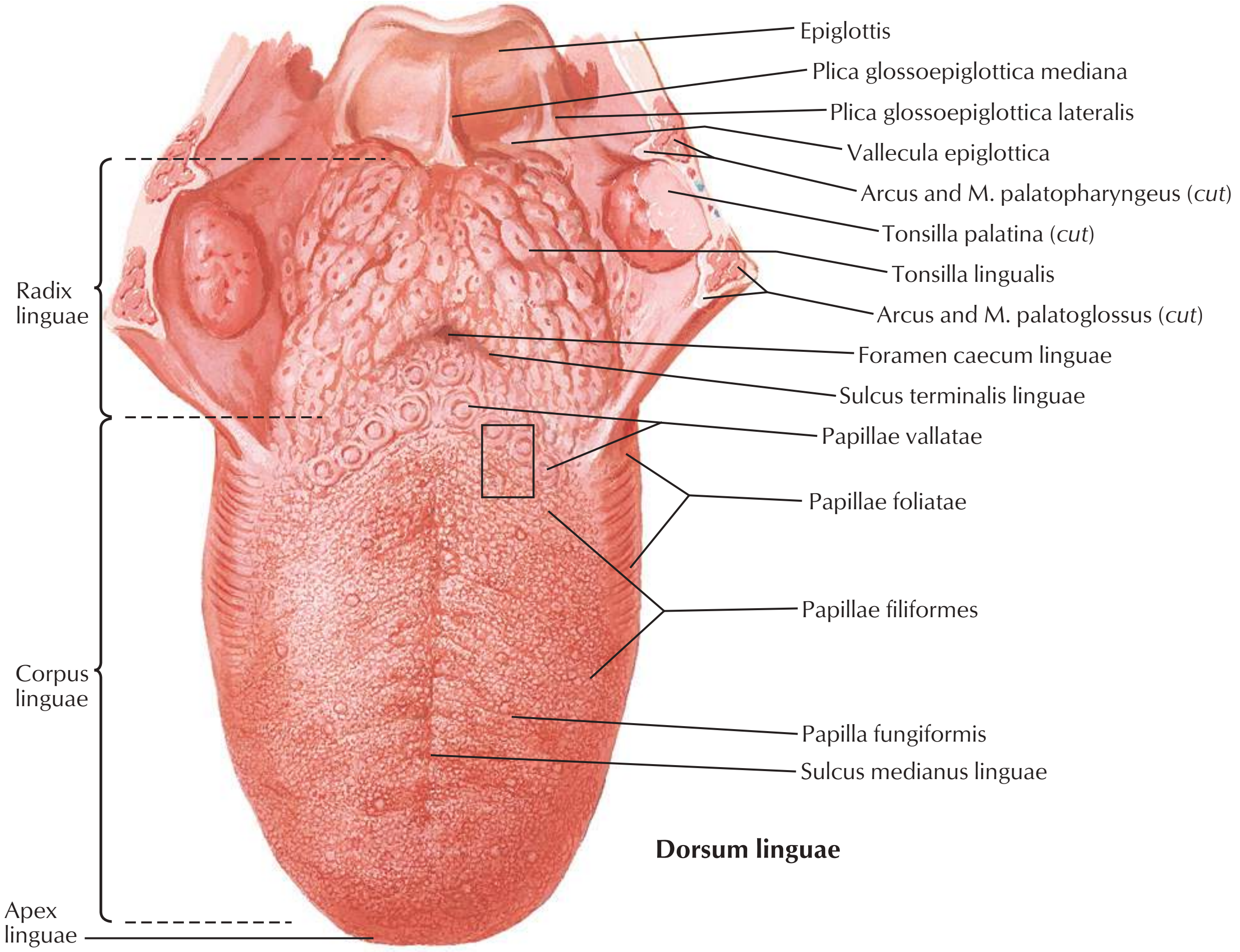

N. mandibularis (CN V3)
Plica sublingualis; Ostia ductuum sublingualium
Glandula sublingualis; Ductus submandibularis (open to show the Ductus sublinguales of the Glandula sublingualis draining into it)
Carunculae sublinguales; Ostia ductuum submandibularium
Frenulum linguae (cut)
Mm. genioglossi
N. and A. alveolaris inferior
A. facialis
Angulus mandibulae
M. mylohyoideus
A. profunda linguae (cut)
A. lingualis
Mm. geniohyoidei
Os hyoideum
Corpus
Cornu minus
Cornu majus
A. sublingualis; N. lingualis
N. alveolaris inferior
Chorda tympani
Aa. maxillaris and alveolaris inferior
A. temporalis superficialis
R. mylohyoideus a. alveolaris inferioris; N. mylohyoideus
A. facialis
Ganglion submandibulare
Glandula submandibularis
A. externa carotidis
A. lingualis
A. dorsalis linguae (cut)
M. hyoglossus
C. Machado M.D.

See also Plates 69, 139

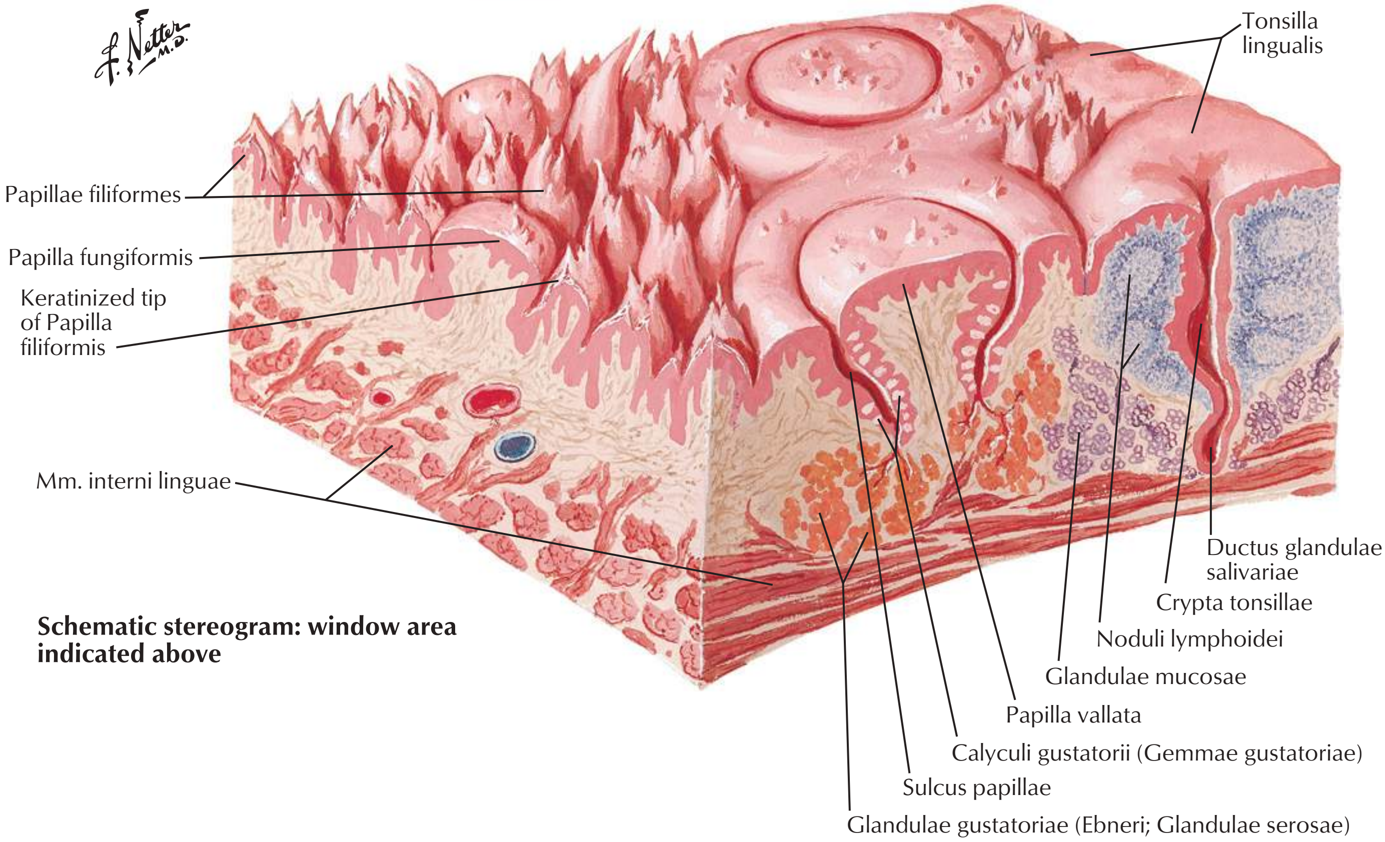

M. palatopharyngeus
M. palatoglossus
M. longitudinalis inferior
Proc. mastoideus
Venter posterior m. digastrici (*cut*)
Proc. styloideus
Fascia pharyngobasilaris
Constrictor superior pharyngis
Lig. stylohyoideum
M. styloglossus
Pars glossopharyngea constrictoris superioris pharyngis
M. stylopharyngeus
M. stylohyoideus
Constrictor medius pharyngis
Venter posterior m. digastrici (*cut*)
M. hyoglossus
Tendo intermedius m. digastrici (*cut*)
Fibrous loop for Tendo intermedius m. digastrici
Os hyoideum
M. genioglossus
M. mylohyoideus (*cut*)
M. geniohyoideus

Lateral view (mandible removed)

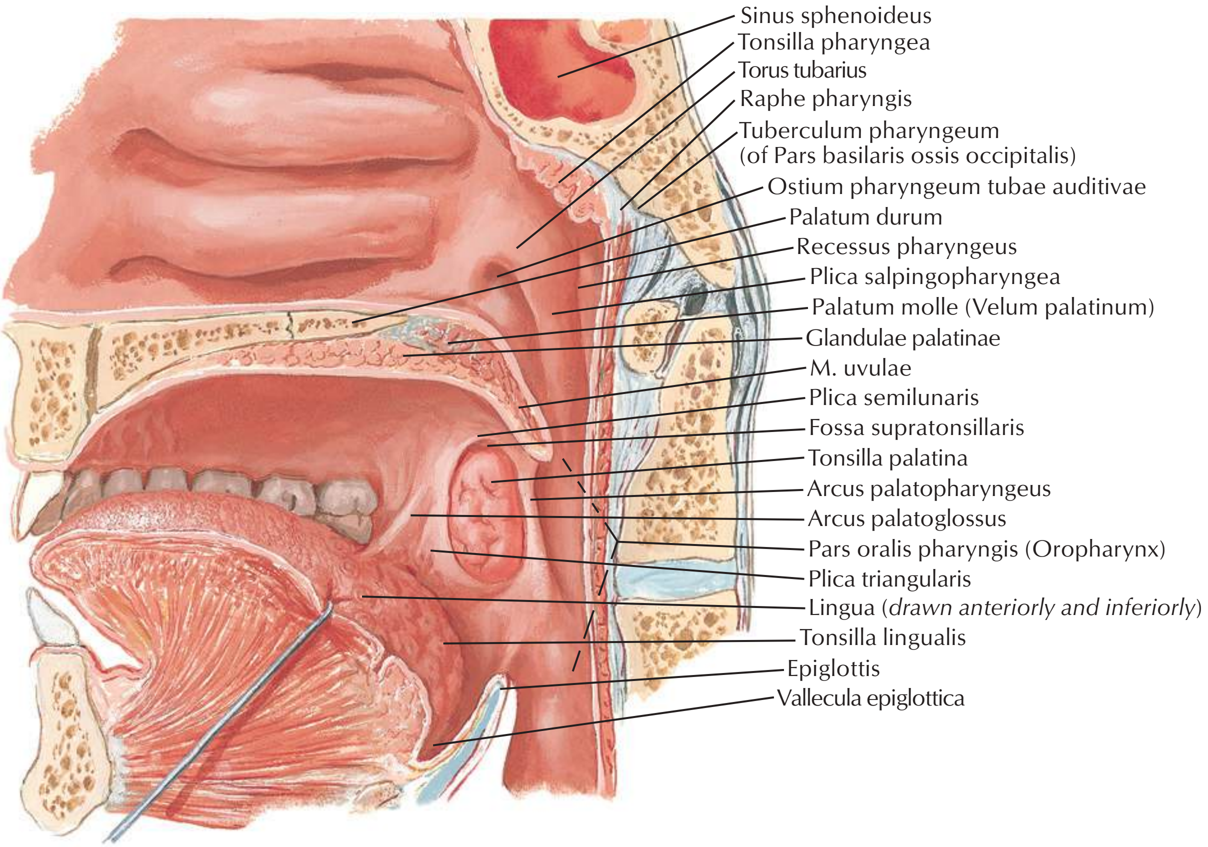

N. lingualis
Ganglion submandibulare
A. and V. profunda linguae
Constrictor superior pharyngis
M. styloglossus
M. palatoglossus (*cut*)
Lig. stylohyoideum
M. stylopharyngeus
M. hyoglossus (*cut*)
A. lingualis
A. externa carotidis
V. jugularis interna
V. retromandibularis
V. facialis
V. facialis communis (common trunk for Vv. facialis, retromandibularis and lingualis)
V. lingualis
Ductus submandibularis (Whartoni)
M. genioglossus
A. and V. sublingualis
M. geniohyoideus
Os hyoideum
N. hypoglossus (XII)
R. suprahyoideus a. lingualis
A. and V. dorsalis linguae
Vena comitans n. hypoglossi
F. Netter M.D.

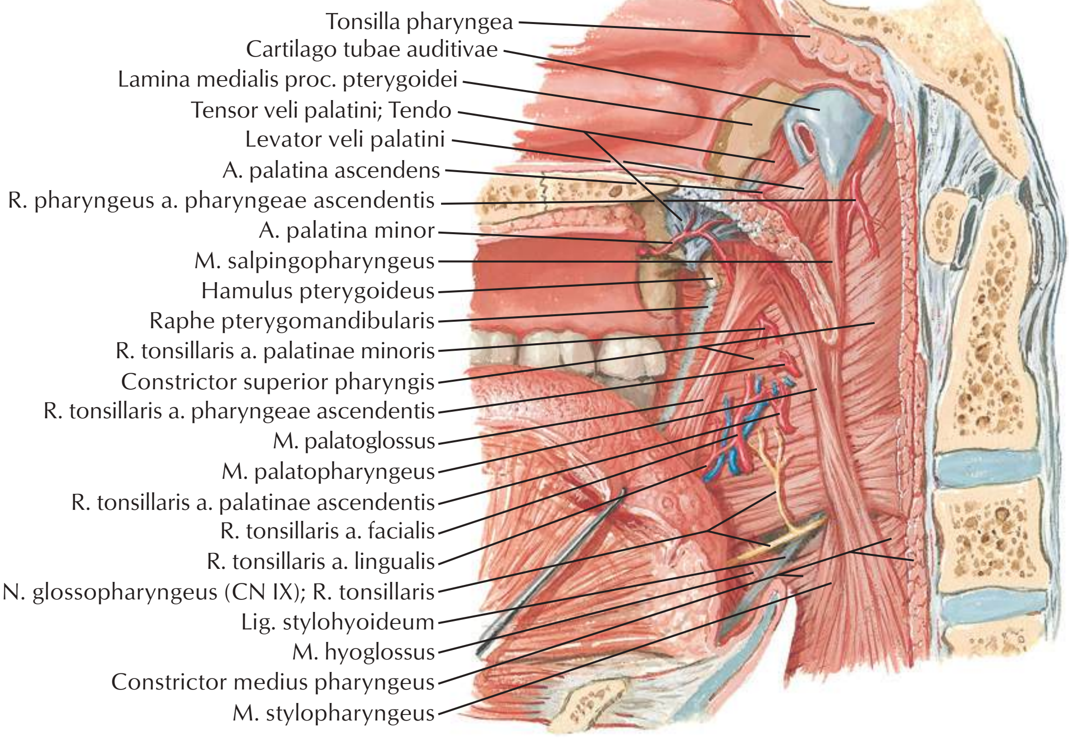

Epiglottis
Plica glossoepiglottica mediana
Plica glossoepiglottica lateralis
Vallecula epiglottica
Arcus and M. palatopharyngeus (*cut*)
Tonsilla palatina (*cut*)
Tonsilla lingualis
Arcus and M. palatoglossus (*cut*)
Foramen caecum linguae
Sulcus terminalis linguae
Papillae vallatae
Papillae foliatae
Papillae filiformes
Papilla fungiformis
Sulcus medianus linguae
Radix linguae
Corpus linguae
Apex linguae

Dorsum linguae


Tonsilla lingualis
Papillae filiformes
Papilla fungiformis
Keratinized tip of Papilla filiformis
Mm. interni linguae
Ductus glandulae salivariae
Crypta tonsillae
Noduli lymphoidei
Glandulae mucosae
Papilla vallata
Calyculi gustatorii (Gemmae gustatoriae)
Sulcus papillae
Glandulae gustatoriae (Ebneri; Glandulae serosae)

Schematic stereogram: window area indicated above

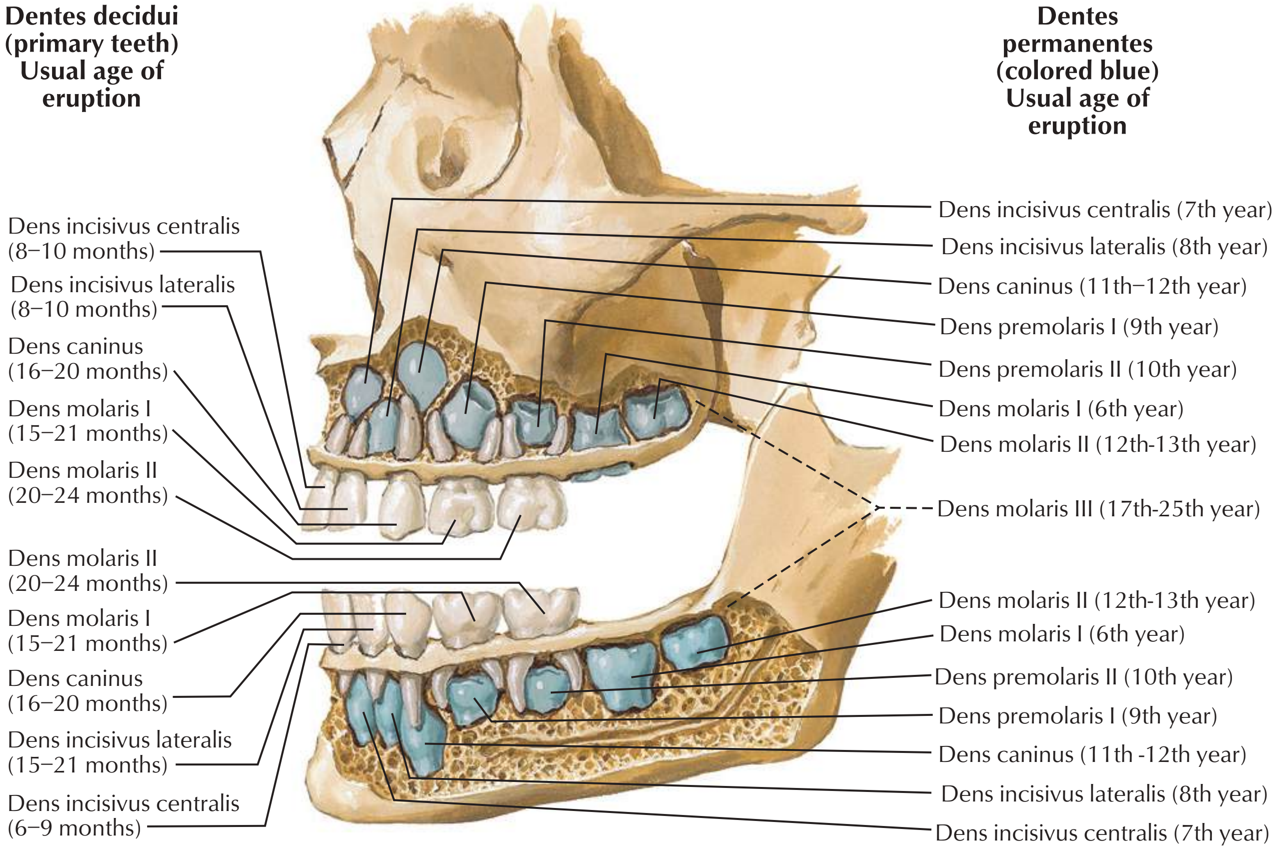

Medial view
sagittal section
Sinus sphenoideus
Tonsilla pharyngea
Torus tubarius
Raphe pharyngis
Tuberculum pharyngeum
(of Pars basilaris ossis occipitalis)
Ostium pharyngeum tubae auditivae
Palatum durum
Recessus pharyngeus
Plica salpingopharyngea
Palatum molle (Velum palatinum)
Glandulae palatinae
M. uvulae
Plica semilunaris
Fossa supratonsillaris
Tonsilla palatina
Arcus palatopharyngeus
Arcus palatoglossus
Pars oralis pharyngis (Oropharynx)
Plica triangularis
Lingua (*drawn anteriorly and inferiorly*)
Tonsilla lingualis
Epiglottis
Vallecula epiglottica

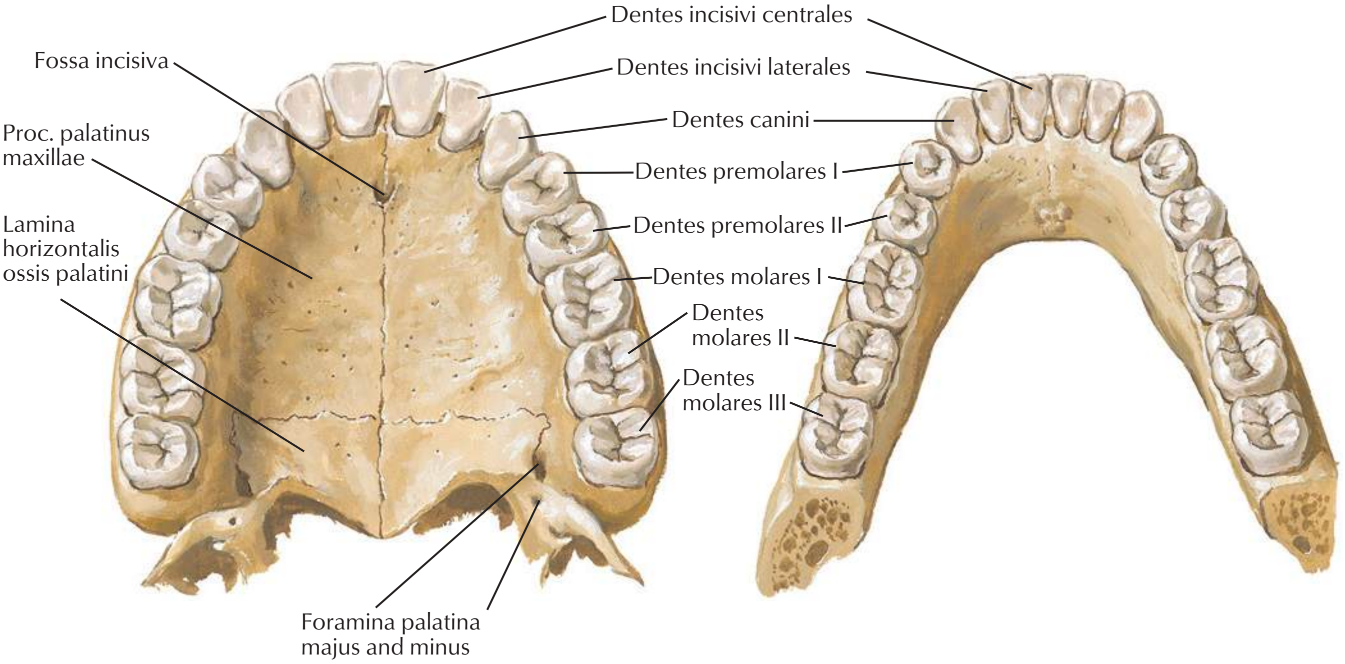

Pharyngeal mucosa removed
Tonsilla pharyngea
Cartilago tubae auditivae
Lamina medialis proc. pterygoidei
Tensor veli palatini; Tendo
Levator veli palatini
A. palatina ascendens
R. pharyngeus a. pharyngeae ascendentis
A. palatina minor
M. salpingopharyngeus
Hamulus pterygoideus
Raphe pterygomandibularis
R. tonsillaris a. palatinae minoris
Constrictor superior pharyngis
R. tonsillaris a. pharyngeae ascendentis
M. palatoglossus
M. palatopharyngeus
R. tonsillaris a. palatinae ascendentis
R. tonsillaris a. facialis
R. tonsillaris a. lingualis
N. glossopharyngeus (CN IX); R. tonsillaris
Lig. stylohyoideum
M. hyoglossus
Constrictor medius pharyngeus
M. stylopharyngeus

F. Netter M.D.

Teeth

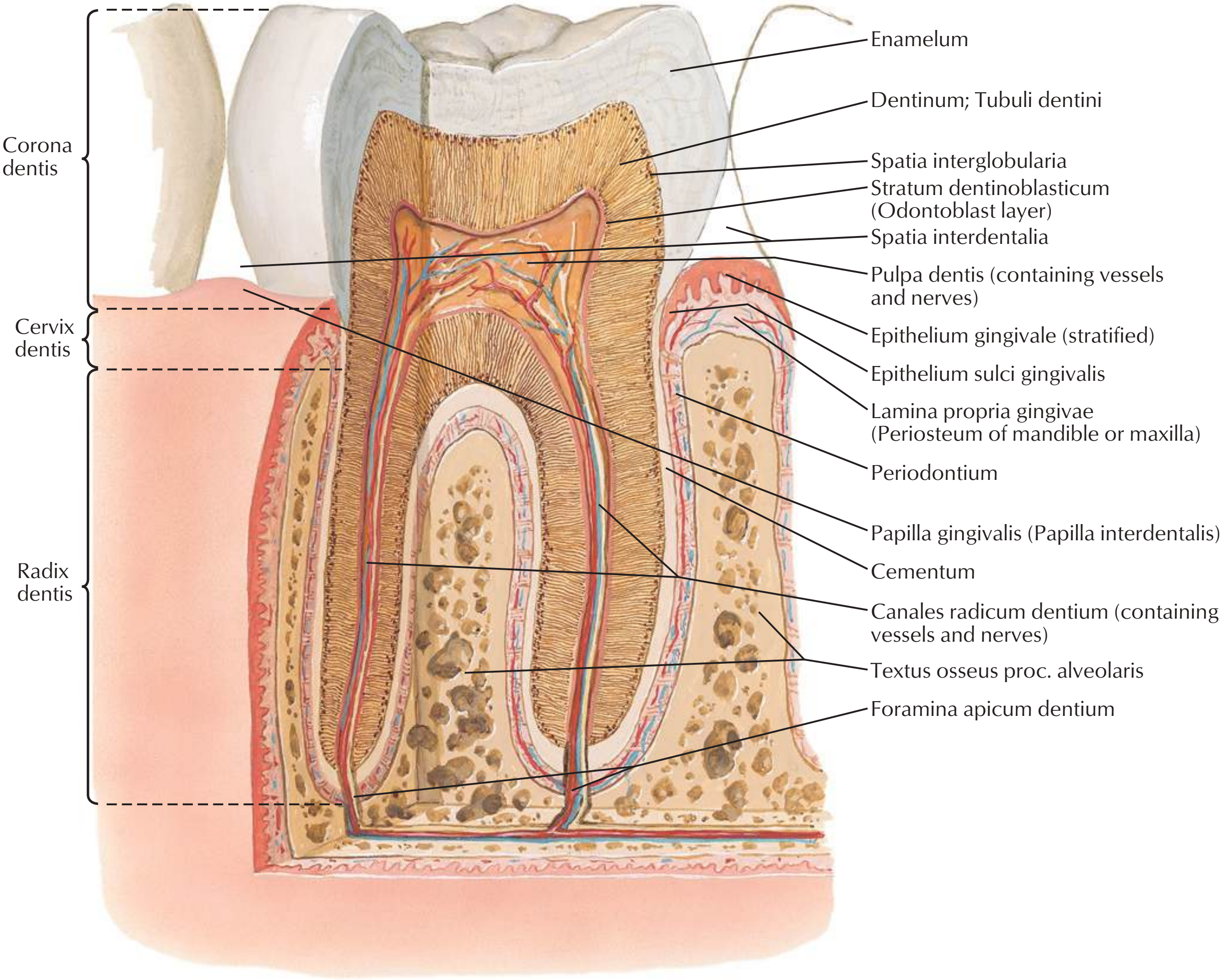
See also Plate 67

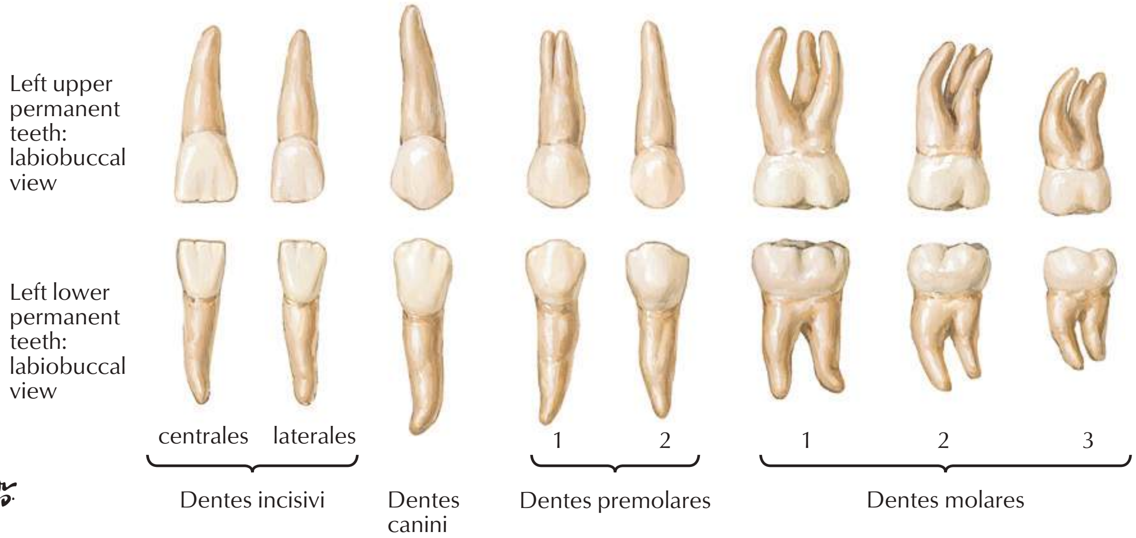

Dentes decidui (primary teeth) Usual age of eruption
Dentes permanentes (colored blue) Usual age of eruption
Dens incisivus centralis (8–10 months)
Dens incisivus lateralis (8–10 months)
Dens caninus (16–20 months)
Dens molaris I (15–21 months)
Dens molaris II (20–24 months)
Dens incisivus centralis (7th year)
Dens incisivus lateralis (8th year)
Dens caninus (11th–12th year)
Dens premolaris I (9th year)
Dens premolaris II (10th year)
Dens molaris I (6th year)
Dens molaris II (12th-13th year)
Dens molaris III (17th-25th year)
Dens molaris II (20–24 months)
Dens molaris I (15–21 months)
Dens caninus (16–20 months)
Dens incisivus lateralis (15–21 months)
Dens incisivus centralis (6–9 months)
Dens molaris II (12th-13th year)
Dens molaris I (6th year)
Dens premolaris II (10th year)
Dens premolaris I (9th year)
Dens caninus (11th -12th year)
Dens incisivus lateralis (8th year)
Dens incisivus centralis (7th year)


Fossa incisiva
Proc. palatinus maxillae
Lamina horizontalis ossis palatini
Dentes incisivi centrales
Dentes incisivi laterales
Dentes canini
Dentes premolares I
Dentes premolares II
Dentes molares I
Dentes molares II
Dentes molares III
Foramina palatina majus and minus

Dentes permanentes superiores

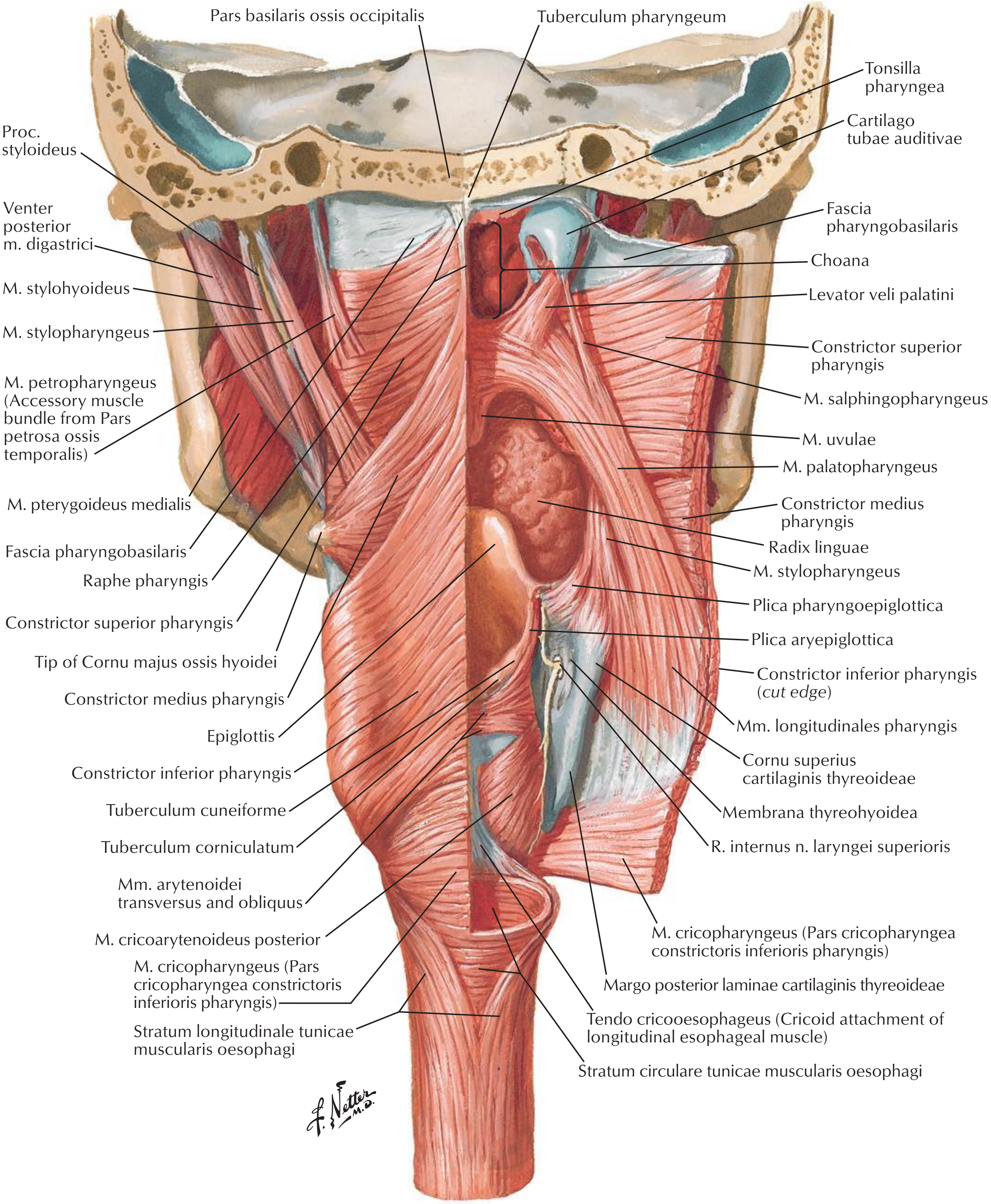
Dentes permanentes inferiores


Corona dentis
Cervix dentis
Radix dentis
Enamelum
Dentinum; Tubuli dentini
Spatia interglobularia
Stratum dentinoblasticum (Odontoblast layer)
Spatia interdentalia
Pulpa dentis (containing vessels and nerves)
Epithelium gingivale (stratified)
Epithelium sulci gingivalis
Lamina propria gingivae (Periosteum of mandible or maxilla)
Periodontium
Papilla gingivalis (Papilla interdentalis)
Cementum
Canales radicum dentium (containing vessels and nerves)
Textus osseus proc. alveolaris
Foramina apicum dentium


Left upper permanent teeth: labiobuccal view
Left lower permanent teeth: labiobuccal view
centrales
laterales
Dentes incisivi
Dentes canini
1
2
Dentes premolares
1
2
3
Dentes molares

Muscles of Pharynx: Partially Opened Posterior View

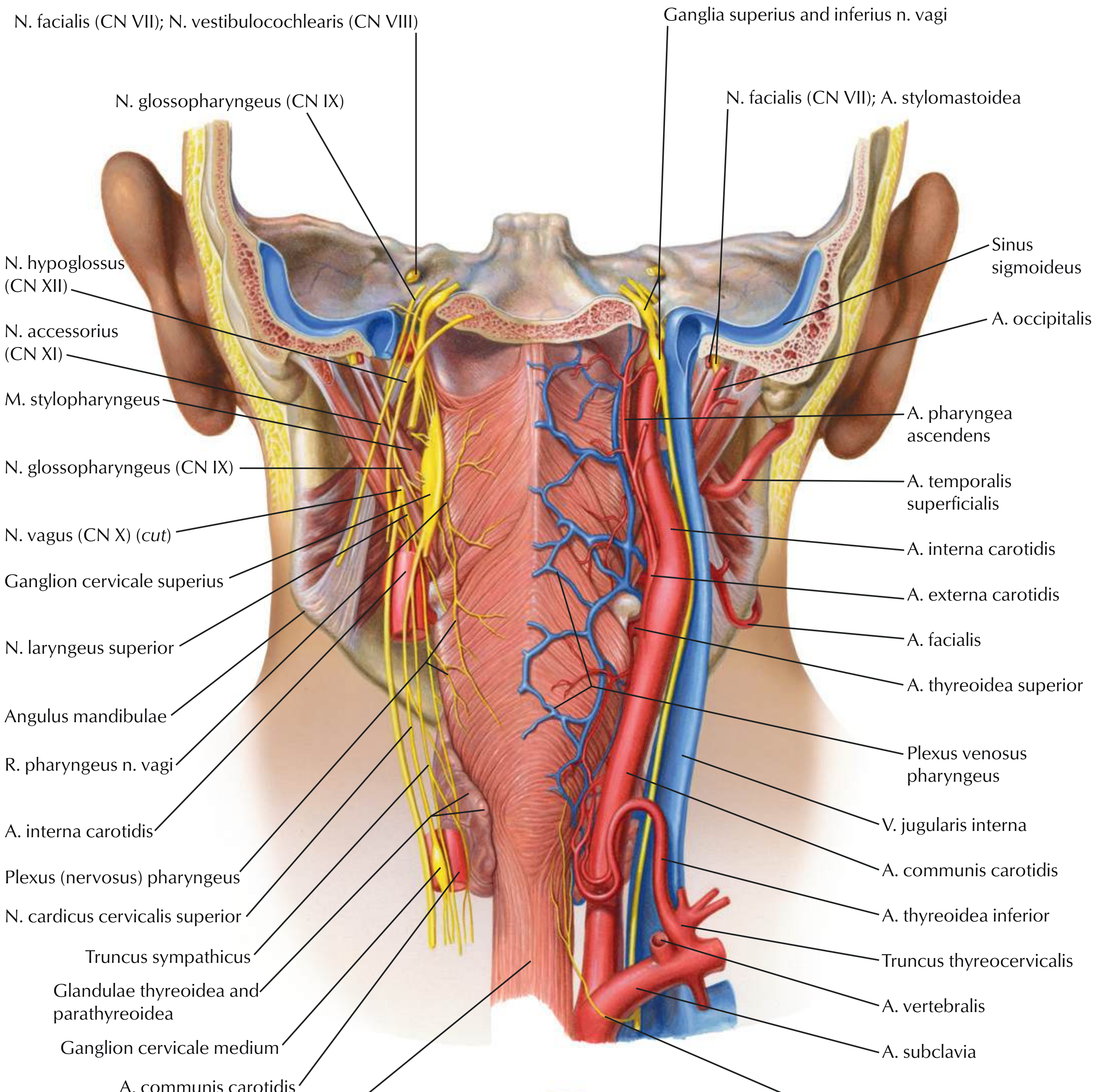
See also Plates 76, 81

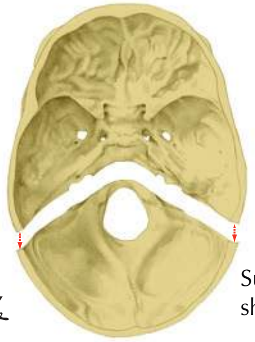


Pars basilaris ossis occipitalis
Tuberculum pharyngeum
Tonsilla pharyngea
Cartilago tubae auditivae
Proc. styloideus
Fascia pharyngobasilaris
Venter posterior m. digastrici
Choana
Levator veli palatini
M. stylohyoideus
M. stylopharyngeus
Constrictor superior pharyngis
M. salphingopharyngeus
M. petropharyngeus (Accessory muscle bundle from Pars petrosa ossis temporalis)
M. uvulae
M. palatopharyngeus
M. pterygoideus medialis
Constrictor medius pharyngis
Radix linguae
Fascia pharyngobasilaris
M. stylopharyngeus
Raphe pharyngis
Plica pharyngoepiglottica
Constrictor superior pharyngis
Plica aryepiglottica
Tip of Cornu majus ossis hyoidei
Constrictor inferior pharyngis (cut edge)
Constrictor medius pharyngis
Mm. longitudinales pharyngis
Epiglottis
Cornu superius cartilaginis thyreoideae
Constrictor inferior pharyngis
Tuberculum cuneiforme
Membrana thyreohyoidea
Tuberculum corniculatum
R. internus n. laryngei superioris
Mm. arytenoidei transversus and obliquus
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
M. cricoarytenoideus posterior
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
Margo posterior laminae cartilaginis thyreoideae
Tendo cricooesophageus (Cricoid attachment of longitudinal esophageal muscle)
Stratum longitudinale tunicae muscularis oesophagi
Stratum circulare tunicae muscularis oesophagi
F. Netter M.D.

Posterior View of Pharynx: Nerves and Vessels

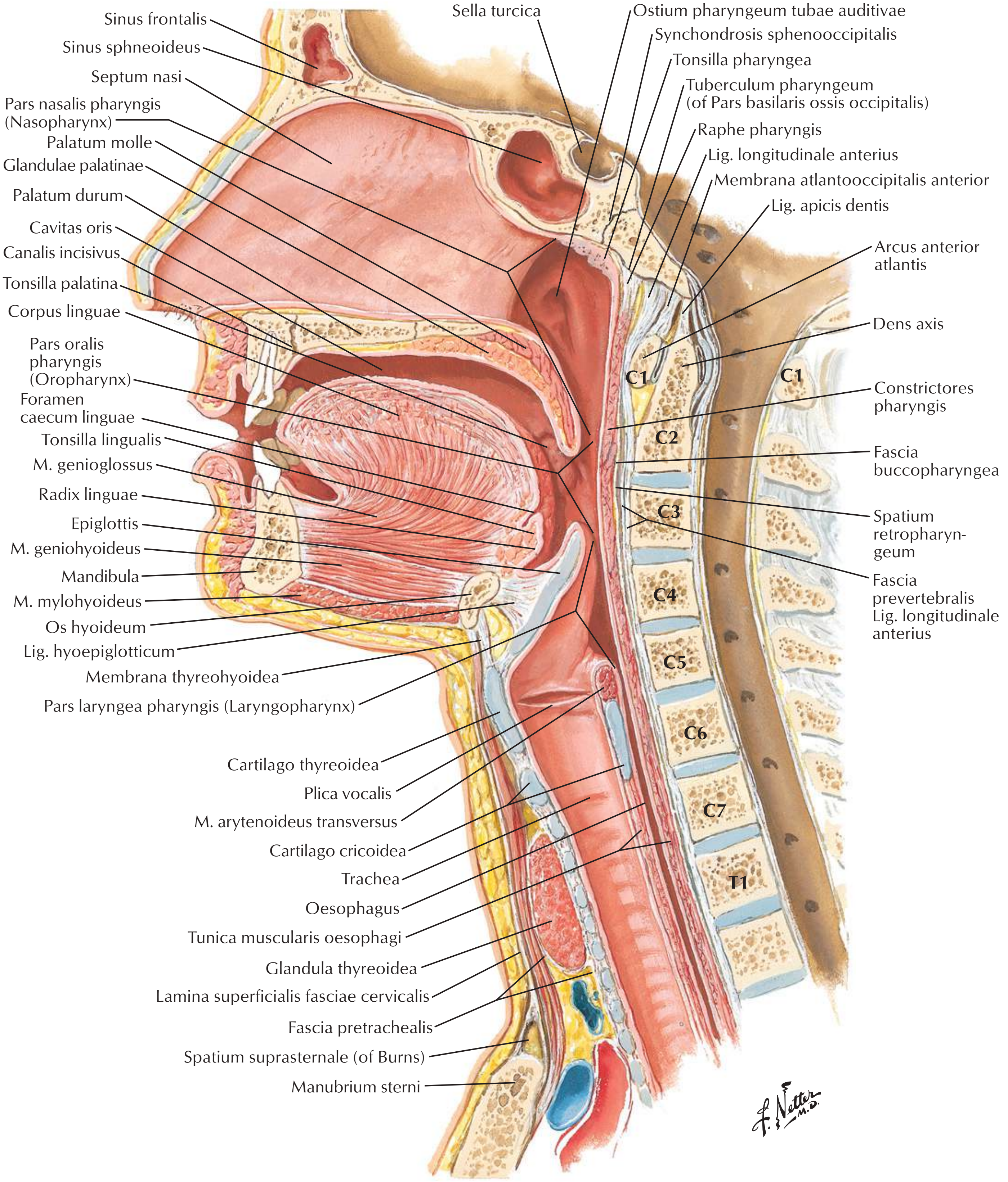
See also Plates 75, 79, 82, 83


N. facialis (CN VII); N. vestibulocochlearis (CN VIII)
N. glossopharyngeus (CN IX)
N. hypoglossus (CN XII)
N. accessorius (CN XI)
M. stylopharyngeus
N. glossopharyngeus (CN IX)
N. vagus (CN X) (*cut*)
Ganglion cervicale superius
N. laryngeus superior
Angulus mandibulae
R. pharyngeus n. vagi
A. interna carotidis
Plexus (nervosus) pharyngeus
N. cardicus cervicalis superior
Truncus sympathicus
Glandulae thyreoidea and parathyreoidea
Ganglion cervicale medium
A. communis carotidis
Oesophagus
Ganglia superius and inferius n. vagi
N. facialis (CN VII); A. stylomastoidea
Sinus sigmoideus
A. occipitalis
A. pharyngea ascendens
A. temporalis superficialis
A. interna carotidis
A. externa carotidis
A. facialis
A. thyreoidea superior
Plexus venosus pharyngeus
V. jugularis interna
A. communis carotidis
A. thyreoidea inferior
Truncus thyreocervicalis
A. vertebralis
A. subclavia
N. laryngeus recurrens
C. Machado M.D.



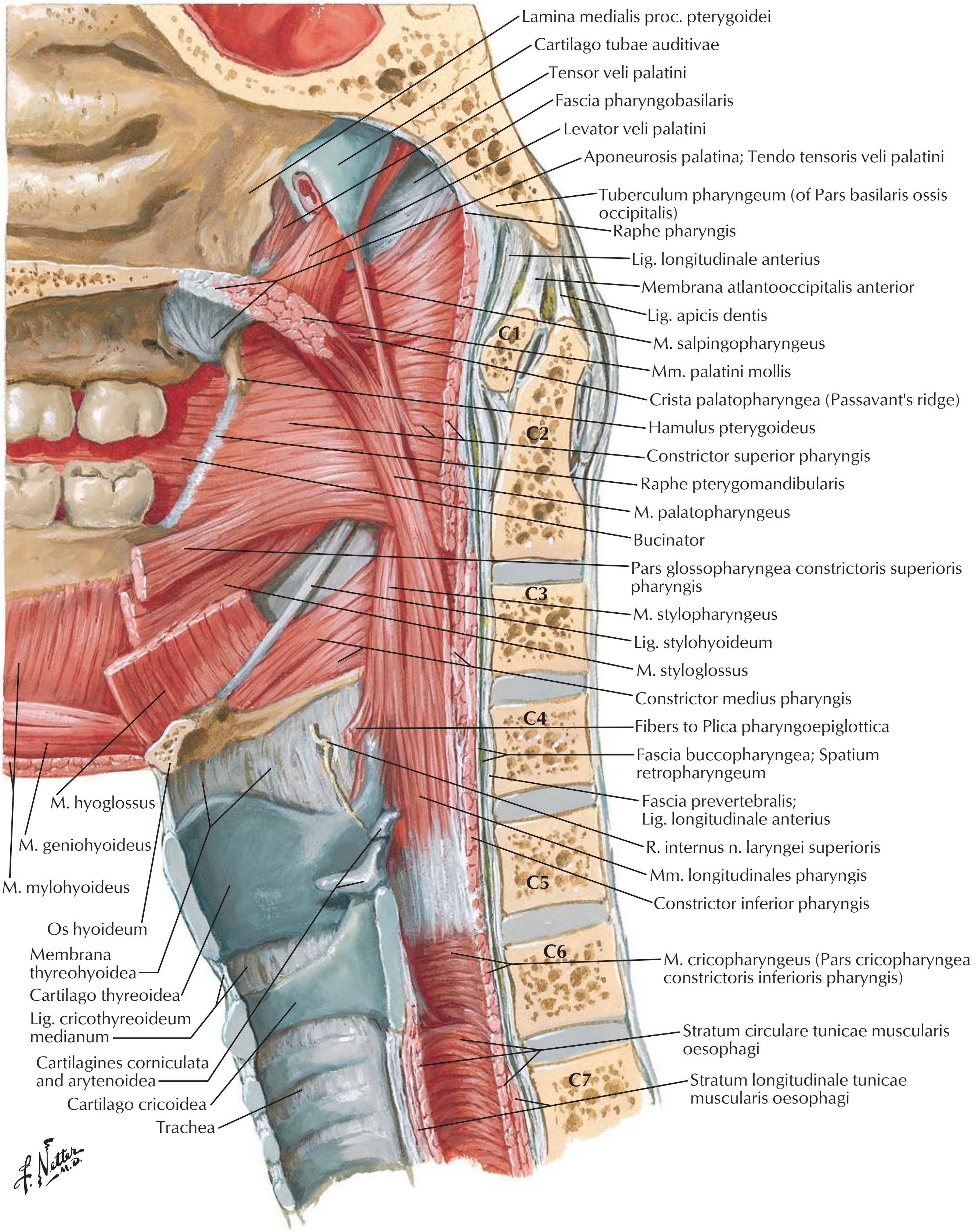
Superior view of the basis cranii
showing line of cut and the removed part

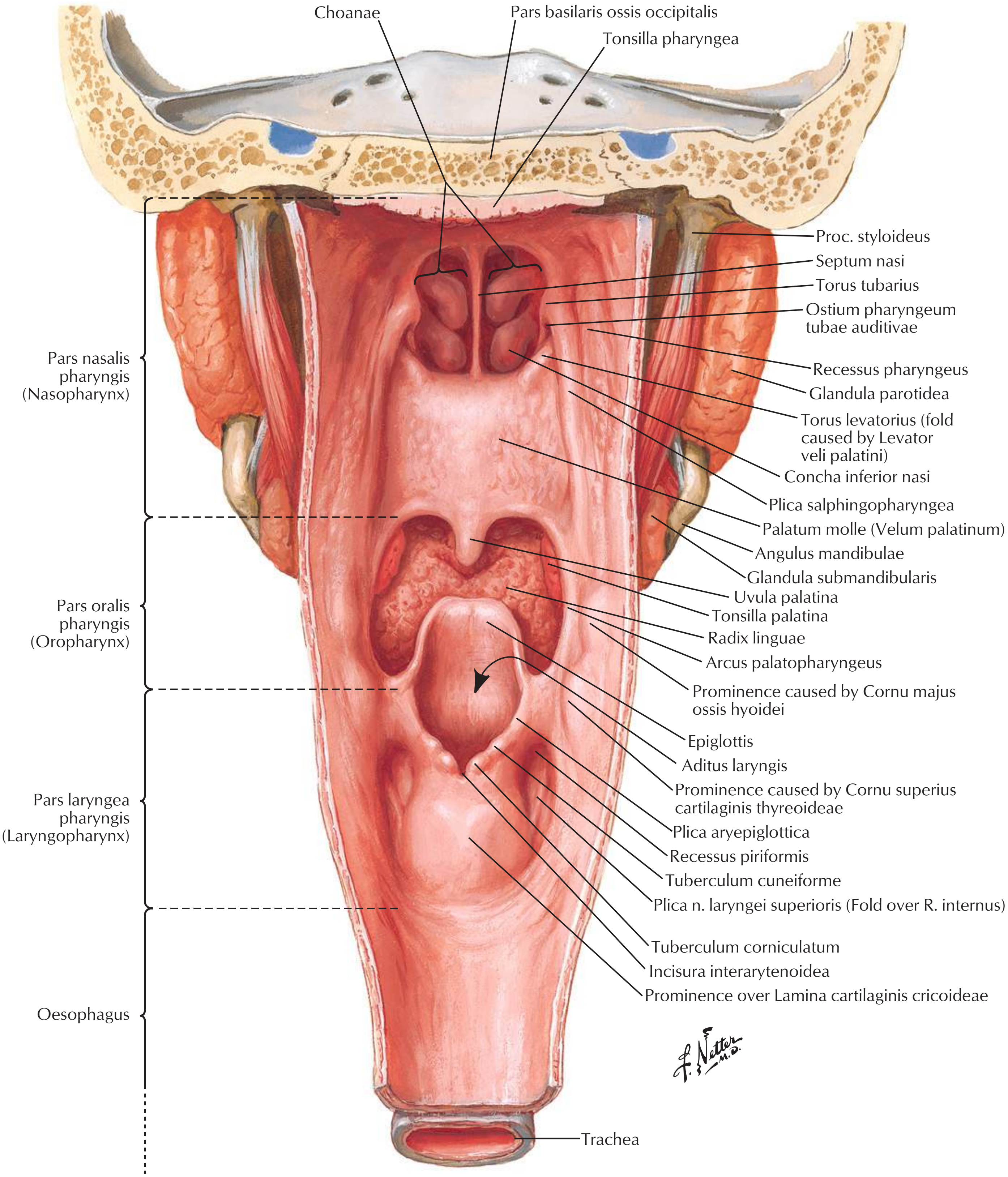
Pharynx: Medial View

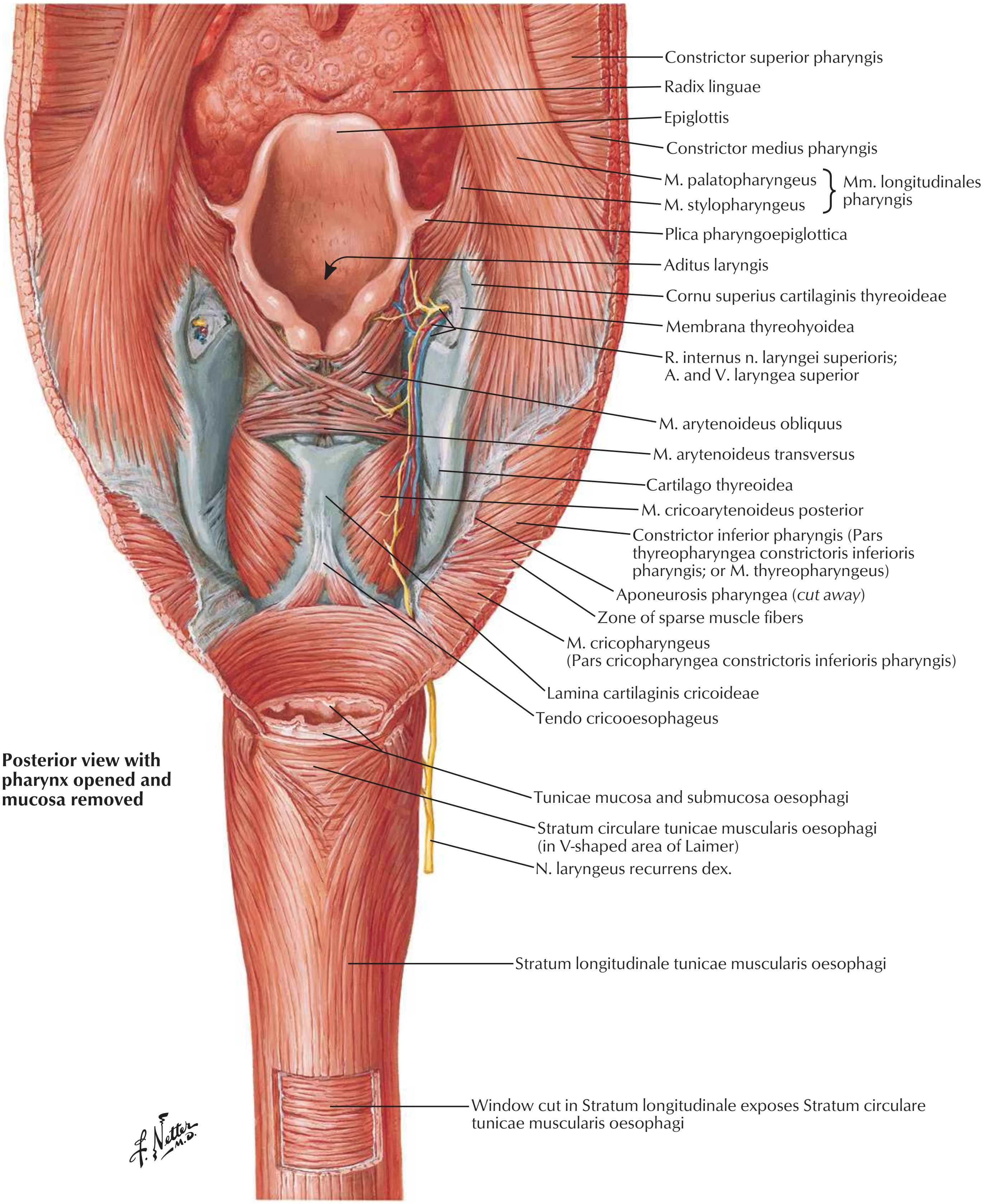

Sinus frontalis
Sinus sphneoideus
Septum nasi
Pars nasalis pharyngis (Nasopharynx)
Palatum molle
Glandulae palatinae
Palatum durum
Cavitas oris
Canalis incisivus
Tonsilla palatina
Corpus linguae
Pars oralis pharyngis (Oropharynx)
Foramen caecum linguae
Tonsilla lingualis
M. genioglossus
Radix linguae
Epiglottis
M. geniohyoideus
Mandibula
M. mylohyoideus
Os hyoideum
Lig. hyoepiglotticum
Membrana thyreohyoidea
Pars laryngea pharyngis (Laryngopharynx)
Cartilago thyreoidea
Plica vocalis
M. arytenoideus transversus
Cartilago cricoidea
Trachea
Oesophagus
Tunica muscularis oesophagi
Glandula thyreoidea
Lamina superficialis fasciae cervicalis
Fascia pretrachealis
Spatium suprasternale (of Burns)
Manubrium sterni
Sella turcica
Ostium pharyngeum tubae auditivae
Synchondrosis sphenooccipitalis
Tonsilla pharyngea
Tuberculum pharyngeum (of Pars basilaris ossis occipitalis)
Raphe pharyngis
Lig. longitudinale anterius
Membrana atlantooccipitalis anterior
Lig. apicis dentis
Arcus anterior atlantis
Dens axis
Constrictores pharyngis
Fascia buccopharyngea
Spatium retropharyngeum
Fascia prevertebralis
Lig. longitudinale anterius
C1
C1
C2
C3
C4
C5
C6
C7
T1
F. Netter M.D.

Muscles of Pharynx: Medial View

See also Plate 72


Lamina medialis proc. pterygoidei
Cartilago tubae auditivae
Tensor veli palatini
Fascia pharyngobasilaris
Levator veli palatini
Aponeurosis palatina; Tendo tensoris veli palatini
Tuberculum pharyngeum (of Pars basilaris ossis occipitalis)
Raphe pharyngis
Lig. longitudinale anterius
Membrana atlantooccipitalis anterior
Lig. apicis dentis
M. salpingopharyngeus
Mm. palatini mollis
Crista palatopharyngea (Passavant's ridge)
Hamulus pterygoideus
Constrictor superior pharyngis
Raphe pterygomandibularis
M. palatopharyngeus
Bucinator
Pars glossopharyngea constrictoris superioris pharyngis
M. stylopharyngeus
Lig. stylohyoideum
M. styloglossus
Constrictor medius pharyngis
Fibers to Plica pharyngoepiglottica
Fascia buccopharyngea; Spatium retropharyngeum
Fascia prevertebralis; Lig. longitudinale anterius
R. internus n. laryngei superioris
Mm. longitudinales pharyngis
Constrictor inferior pharyngis
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
Stratum circulare tunicae muscularis oesophagi
Stratum longitudinale tunicae muscularis oesophagi
C1
C2
C3
C4
C5
C6
C7
M. hyoglossus
M. geniohyoideus
M. mylohyoideus
Os hyoideum
Membrana thyreohyoidea
Cartilago thyreoidea
Lig. cricothyreoideum medianum
Cartilagines corniculata and arytenoidea
Cartilago cricoidea
Trachea
F. Netter M.D.

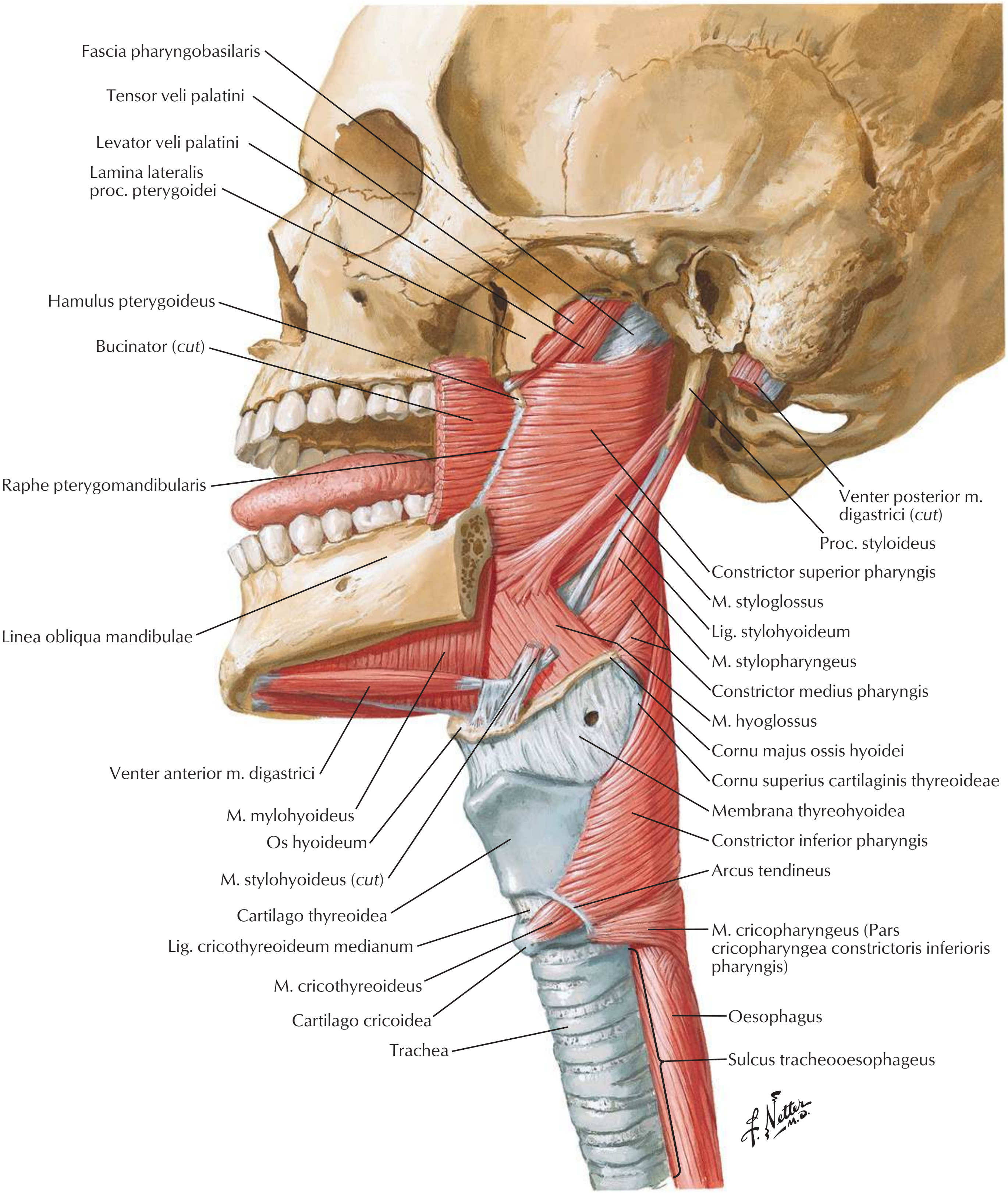

Choanae
Pars basilaris ossis occipitalis
Tonsilla pharyngea
Proc. styloideus
Septum nasi
Torus tubarius
Ostium pharyngeum tubae auditivae
Recessus pharyngeus
Glandula parotidea
Torus levatorius (fold caused by Levator veli palatini)
Concha inferior nasi
Plica salphingopharyngea
Palatum molle (Velum palatinum)
Angulus mandibulae
Glandula submandibularis
Uvula palatina
Tonsilla palatina
Radix linguae
Arcus palatopharyngeus
Prominence caused by Cornu majus ossis hyoidei
Epiglottis
Aditus laryngis
Prominence caused by Cornu superius cartilaginis thyreoideae
Plica aryepiglottica
Recessus piriformis
Tuberculum cuneiforme
Plica n. laryngei superioris (Fold over R. internus)
Tuberculum corniculatum
Incisura interarytenoidea
Prominence over Lamina cartilaginis cricoideae
Trachea
Pars nasalis pharyngis (Nasopharynx)
Pars oralis pharyngis (Oropharynx)
Pars laryngea pharyngis (Laryngopharynx)
Oesophagus
F. Netter M.D.


Constrictor superior pharyngis
Radix linguae
Epiglottis
Constrictor medius pharyngis
M. palatopharyngeus
M. stylopharyngeus
Mm. longitudinales pharyngis
Plica pharyngoepiglottica
Aditus laryngis
Cornu superius cartilaginis thyreoideae
Membrana thyreohyoidea
R. internus n. laryngei superioris; A. and V. laryngea superior
M. arytenoideus obliquus
M. arytenoideus transversus
Cartilago thyreoidea
M. cricoarytenoideus posterior
Constrictor inferior pharyngis (Pars thyreopharyngea constrictoris inferioris pharyngis; or M. thyreopharyngeus)
Aponeurosis pharyngea (*cut away*)
Zone of sparse muscle fibers
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
Lamina cartilaginis cricoideae
Tendo cricooesophageus
Tunicae mucosa and submucosa oesophagi
Stratum circulare tunicae muscularis oesophagi (in V-shaped area of Laimer)
N. laryngeus recurrens dex.
Stratum longitudinale tunicae muscularis oesophagi
Window cut in Stratum longitudinale exposes Stratum circulare tunicae muscularis oesophagi
F. Netter M.D.

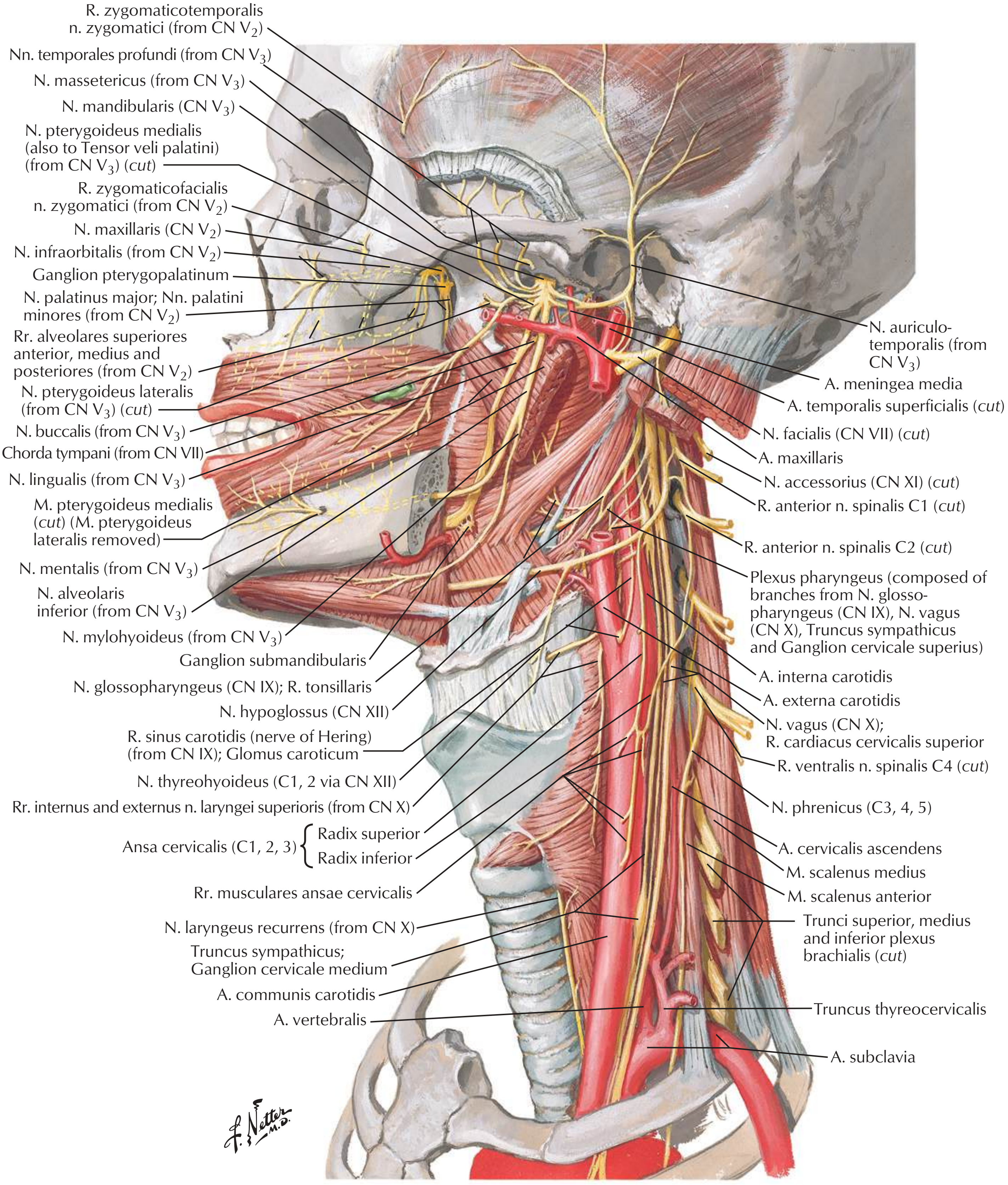
Posterior view with pharynx opened and mucosa removed

Muscles of Pharynx: Lateral View

See also Plate 75

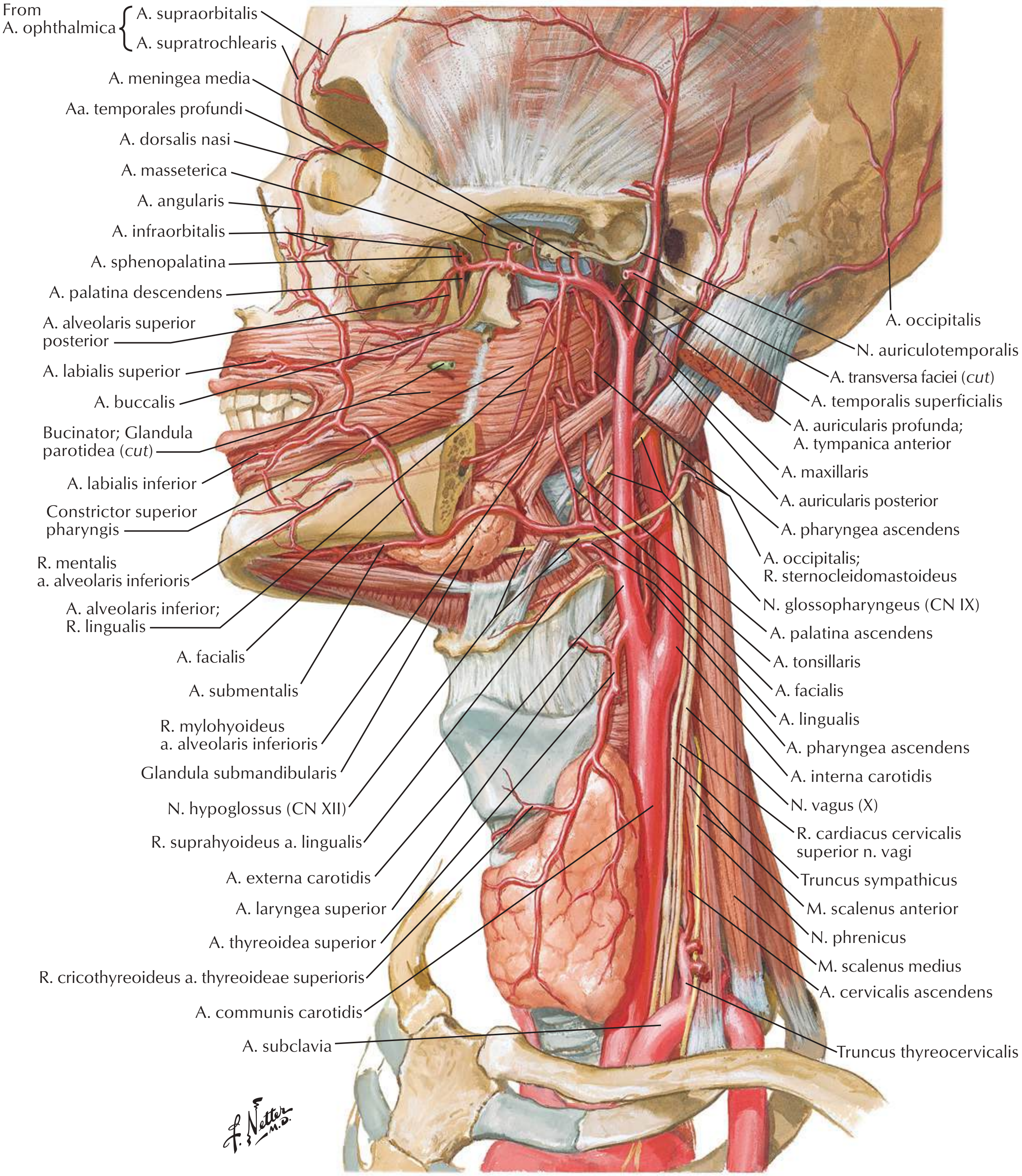

Fascia pharyngobasilaris
Tensor veli palatini
Levator veli palatini
Lamina lateralis proc. pterygoidei
Hamulus pterygoideus
Bucinator (*cut*)
Raphe pterygomandibularis
Linea obliqua mandibulae
Venter anterior m. digastrici
M. mylohyoideus
Os hyoideum
M. stylohyoideus (*cut*)
Cartilago thyreoidea
Lig. cricothyreoideum medianum
M. cricothyreoideus
Cartilago cricoidea
Trachea
Venter posterior m. digastrici (*cut*)
Proc. styloideus
Constrictor superior pharyngis
M. styloglossus
Lig. stylohyoideum
M. stylopharyngeus
Constrictor medius pharyngis
M. hyoglossus
Cornu majus ossis hyoidei
Cornu superius cartilaginis thyreoideae
Membrana thyreohyoidea
Constrictor inferior pharyngis
Arcus tendineus
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
Oesophagus
Sulcus tracheooesophageus
f. Netter M.D.

See also Plates 59, 133, 136

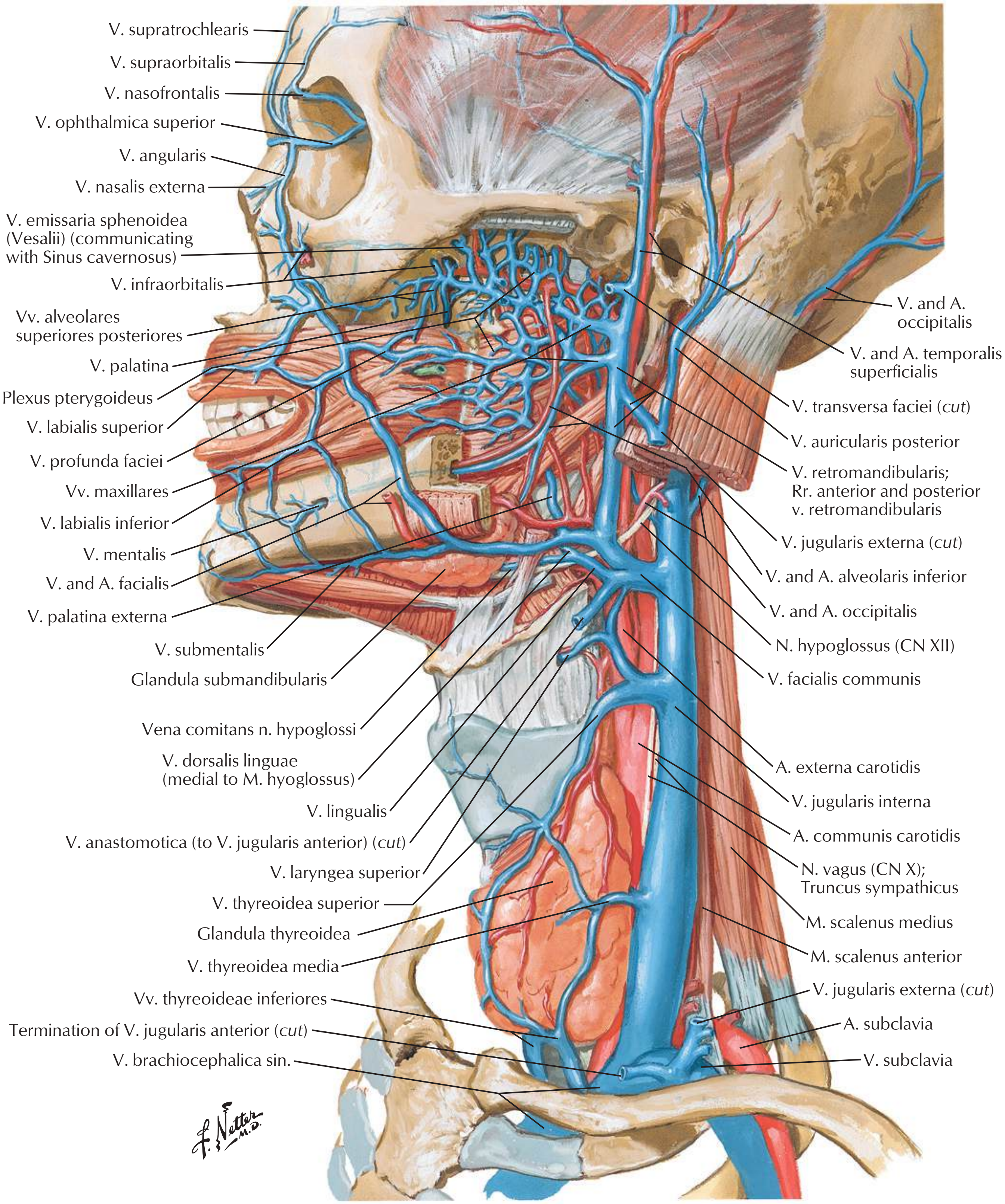

R. zygomaticotemporalis n. zygomatici (from CN V_2)
Nn. temporales profundi (from CN V_3)
N. massetericus (from CN V_3)
N. mandibularis (CN V_3)
N. pterygoideus medialis (also to Tensor veli palatini) (from CN V_3) (*cut*)
R. zygomaticofacialis n. zygomatici (from CN V_2)
N. maxillaris (CN V_2)
N. infraorbitalis (from CN V_2)
Ganglion pterygopalatinum
N. palatinus major; Nn. palatini minores (from CN V_2)
Rr. alveolares superiores anterior, medius and posteriores (from CN V_2)
N. pterygoideus lateralis (from CN V_3) (*cut*)
N. buccalis (from CN V_3)
Chorda tympani (from CN VII)
N. lingualis (from CN V_3)
M. pterygoideus medialis (*cut*) (M. pterygoideus lateralis removed)
N. mentalis (from CN V_3)
N. alveolaris inferior (from CN V_3)
N. mylohyoideus (from CN V_3)
Ganglion submandibularis
N. glossopharyngeus (CN IX); R. tonsillaris
N. hypoglossus (CN XII)
R. sinus carotidis (nerve of Hering) (from CN IX); Glomus caroticum
N. thyreohyoideus (C1, 2 via CN XII)
Rr. internus and externus n. laryngei superioris (from CN X)
Ansa cervicalis (C1, 2, 3) { Radix superior
Radix inferior
Rr. musculares ansae cervicalis
N. laryngeus recurrens (from CN X)
Truncus sympathicus; Ganglion cervicale medium
A. communis carotidis
A. vertebralis
N. auriculotemporalis (from CN V_3)
A. meningea media
A. temporalis superficialis (*cut*)
N. facialis (CN VII) (*cut*)
A. maxillaris
N. accessorius (CN XI) (*cut*)
R. anterior n. spinalis C1 (*cut*)
R. anterior n. spinalis C2 (*cut*)
Plexus pharyngeus (composed of branches from N. glossopharyngeus (CN IX), N. vagus (CN X), Truncus sympathicus and Ganglion cervicale superius)
A. interna carotidis
A. externa carotidis
N. vagus (CN X); R. cardiacus cervicalis superior
R. ventralis n. spinalis C4 (*cut*)
N. phrenicus (C3, 4, 5)
A. cervicalis ascendens
M. scalenus medius
M. scalenus anterior
Trunci superior, medius and inferior plexus brachialis (*cut*)
Truncus thyreocervicalis
A. subclavia

Arteries of Oral and Pharyngeal Regions

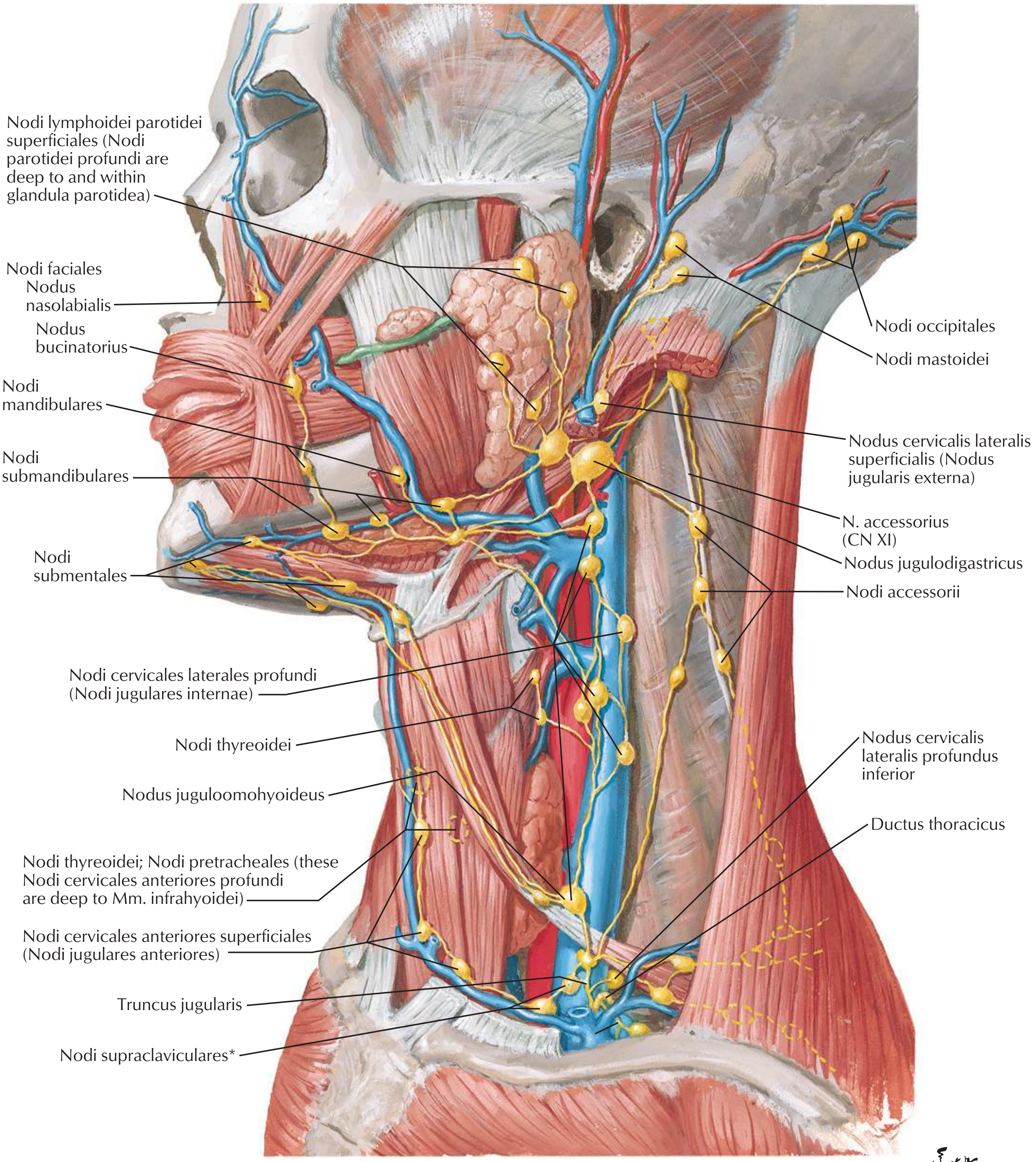
See also Plates 41, 57


From A. ophthalmica
A. supraorbitalis
A. supratrochlearis
A. meningea media
Aa. temporales profundi
A. dorsalis nasi
A. masseterica
A. angularis
A. infraorbitalis
A. sphenopalatina
A. palatina descendens
A. alveolaris superior posterior
A. labialis superior
A. buccalis
Bucinator; Glandula parotidea (*cut*)
A. labialis inferior
Constrictor superior pharyngis
R. mentalis a. alveolaris inferioris
A. alveolaris inferior; R. lingualis
A. facialis
A. submentalis
R. mylohyoideus a. alveolaris inferioris
Glandula submandibularis
N. hypoglossus (CN XII)
R. suprahyoideus a. lingualis
A. externa carotidis
A. laryngea superior
A. thyreoidea superior
R. cricothyreoideus a. thyreoideae superioris
A. communis carotidis
A. subclavia
A. occipitalis
N. auriculotemporalis
A. transversa faciei (*cut*)
A. temporalis superficialis
A. auricularis profunda; A. tympanica anterior
A. maxillaris
A. auricularis posterior
A. pharyngea ascendens
A. occipitalis; R. sternocleidomastoideus
N. glossopharyngeus (CN IX)
A. palatina ascendens
A. tonsillaris
A. facialis
A. lingualis
A. pharyngea ascendens
A. interna carotidis
N. vagus (X)
R. cardiacus cervicalis superior n. vagi
Truncus sympathicus
M. scalenus anterior
N. phrenicus
M. scalenus medius
A. cervicalis ascendens
Truncus thyreocervicalis

See also Plate 85

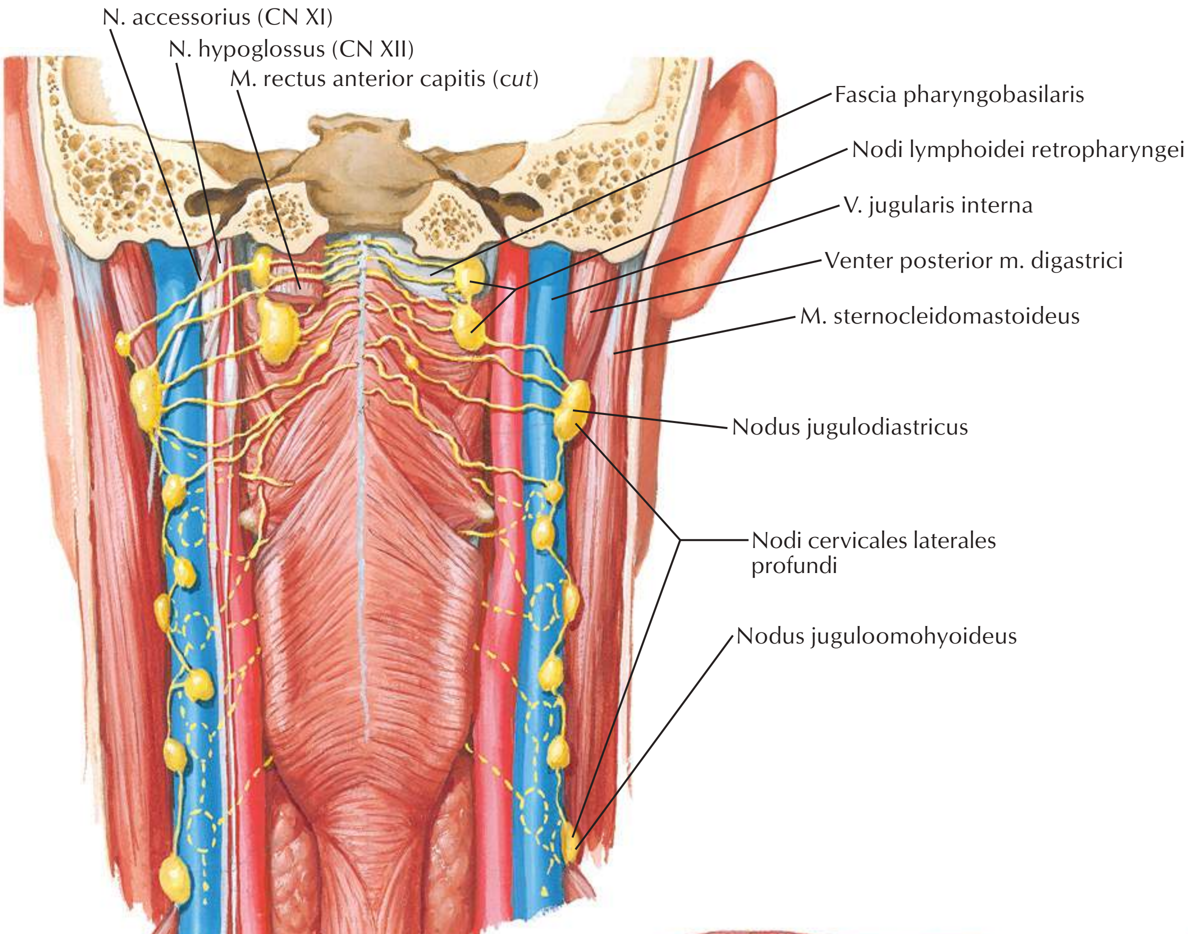

V. supratrochlearis
V. supraorbitalis
V. nasofrontalis
V. ophthalmica superior
V. angularis
V. nasalis externa
V. emissaria sphenoidea (Vesalii) (communicating with Sinus cavernosus)
V. infraorbitalis
Vv. alveolares superiores posteriores
V. palatina
Plexus pterygoideus
V. labialis superior
V. profunda faciei
Vv. maxillares
V. labialis inferior
V. mentalis
V. and A. facialis
V. palatina externa
V. submentalis
Glandula submandibularis
Vena comitans n. hypoglossi
V. dorsalis linguae (medial to M. hyoglossus)
V. lingualis
V. anastomotica (to V. jugularis anterior) (*cut*)
V. laryngea superior
V. thyreoidea superior
Glandula thyreoidea
V. thyreoidea media
Vv. thyreoideae inferiores
Termination of V. jugularis anterior (*cut*)
V. brachiocephalica sin.
V. and A. occipitalis
V. and A. temporalis superficialis
V. transversa faciei (*cut*)
V. auricularis posterior
V. retromandibularis; Rr. anterior and posterior v. retromandibularis
V. jugularis externa (*cut*)
V. and A. alveolaris inferior
V. and A. occipitalis
N. hypoglossus (CN XII)
V. facialis communis
A. externa carotidis
V. jugularis interna
A. communis carotidis
N. vagus (CN X); Truncus sympathicus
M. scalenus medius
M. scalenus anterior
V. jugularis externa (*cut*)
A. subclavia
V. subclavia
F. Netter M.D.

See also Plate 242

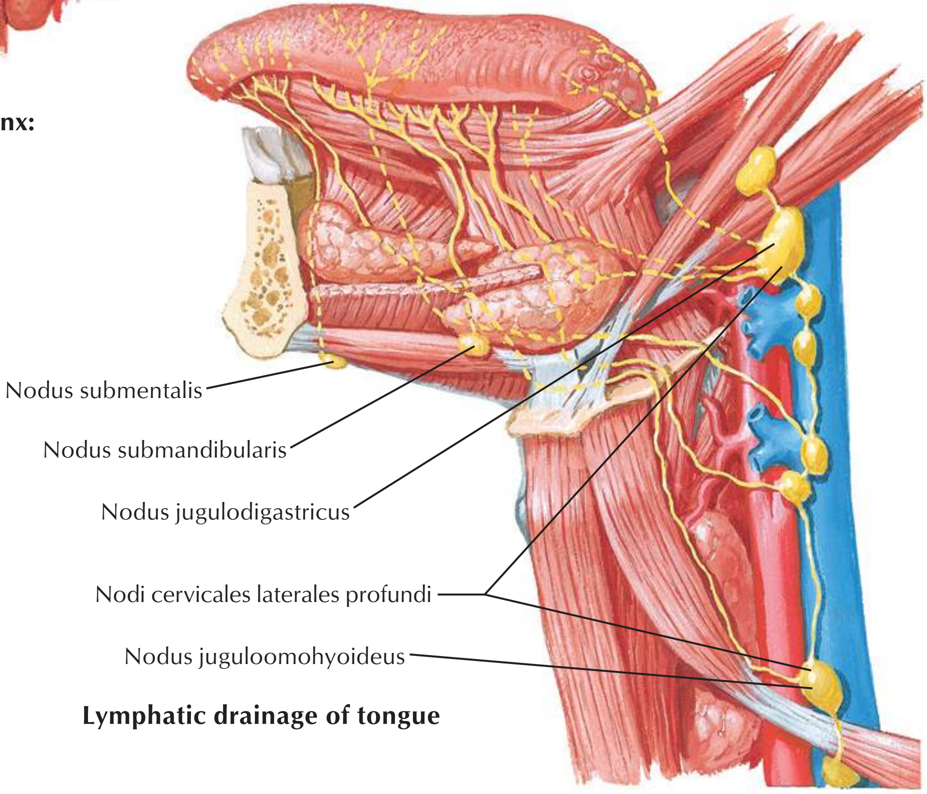


Nodi lymphoidei parotidei superficiales (Nodi parotidei profundi are deep to and within glandula parotidea)
Nodi faciales
Nodus nasolabialis
Nodus bucinatorius
Nodi mandibulares
Nodi submandibulares
Nodi submentales
Nodi cervicales laterales profundi (Nodi jugulares internae)
Nodi thyreoidei
Nodus juguloomohyoideus
Nodi thyreoidei; Nodi pretracheales (these Nodi cervicales anteriores profundi are deep to Mm. infrahyoidei)
Nodi cervicales anteriores superficiales (Nodi jugulares anteriores)
Truncus jugularis
Nodi supraclaviculares*
Nodi occipitales
Nodi mastoidei
Nodus cervicalis lateralis superficialis (Nodus jugularis externa)
N. accessorius (CN XI)
Nodus jugulodigastricus
Nodi accessorii
Nodus cervicalis lateralis profundus inferior
Ductus thoracicus

**Nodi supraclaviculares, especially on the left, are also sometimes referred to as the signal or sentinel lymph nodes of Virchow or Troisier, especially when sufficiently enlarged and palpable. These nodes (or a single node) are so termed because they may be the first recognized presumptive evidence of malignant disease in the viscera.*


N. accessorius (CN XI)
N. hypoglossus (CN XII)
M. rectus anterior capitis (*cut*)
Fascia pharyngobasilaris
Nodi lymphoidei retropharyngei
V. jugularis interna
Venter posterior m. digastrici
M. sternocleidomastoideus
Nodus jugulodiastricus
Nodi cervicales laterales profundi
Nodus juguloomohyoideus

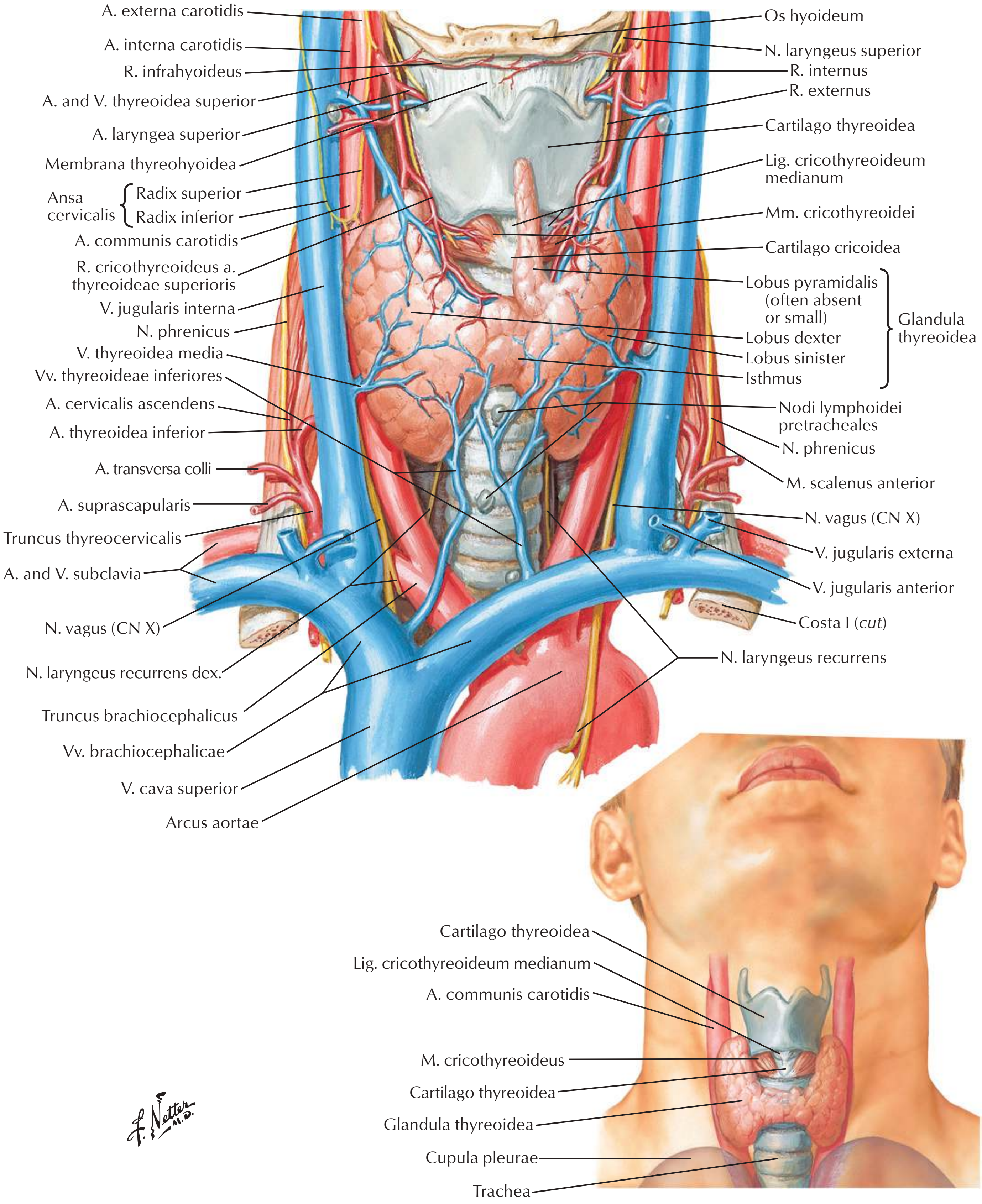
Lymphatic drainage of pharynx: posterior view


Nodus submentalis
Nodus submandibularis
Nodus jugulodigastricus
Nodi cervicales laterales profundi
Nodus juguloomohyoideus

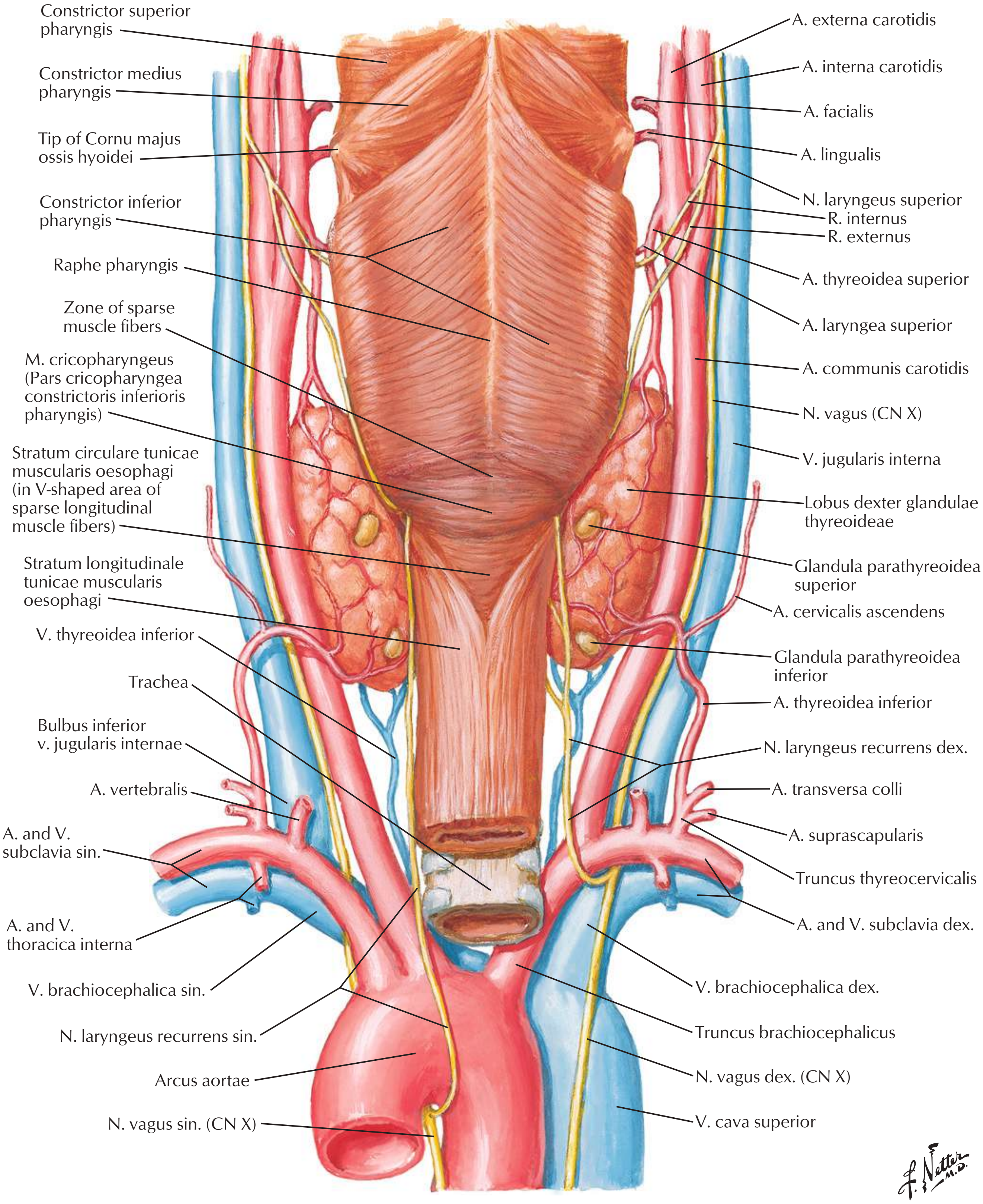
F. Netter M.D.

Lymphatic drainage of tongue

Thyroid Gland: Anterior View

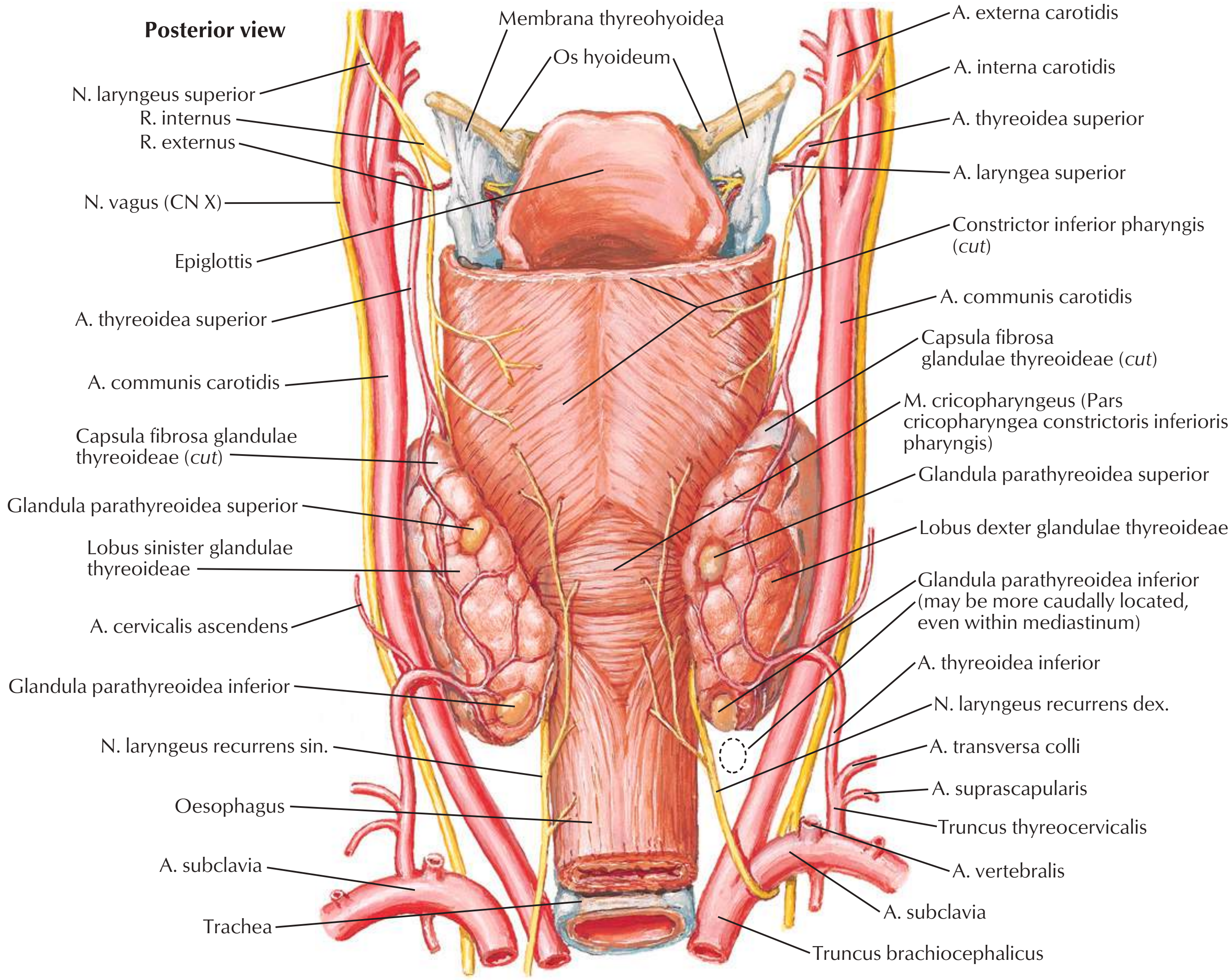

A. externa carotidis
A. interna carotidis
R. infrahyoideus
A. and V. thyreoidea superior
A. laryngea superior
Membrana thyreohyoidea
Ansa cervicalis
Radix superior
Radix inferior
A. communis carotidis
R. cricothyreoideus a. thyreoideae superioris
V. jugularis interna
N. phrenicus
V. thyreoidea media
Vv. thyreoideae inferiores
A. cervicalis ascendens
A. thyreoidea inferior
A. transversa colli
A. suprascapularis
Truncus thyreocervicalis
A. and V. subclavia
N. vagus (CN X)
N. laryngeus recurrens dex.
Truncus brachiocephalicus
Vv. brachiocephalicae
V. cava superior
Arcus aortae
Os hyoideum
N. laryngeus superior
R. internus
R. externus
Cartilago thyreoidea
Lig. cricothyreoideum medianum
Mm. cricothyreoidei
Cartilago cricoidea
Lobus pyramidalis (often absent or small)
Lobus dexter
Lobus sinister
Isthmus
Glandula thyreoidea
Nodi lymphoidei pretracheales
N. phrenicus
M. scalenus anterior
N. vagus (CN X)
V. jugularis externa
V. jugularis anterior
Costa I (*cut*)
N. laryngeus recurrens
Cartilago thyreoidea
Lig. cricothyreoideum medianum
A. communis carotidis
M. cricothyreoideus
Cartilago thyreoidea
Glandula thyreoidea
Cupula pleurae
Trachea
F. Netter M.D.

See also Plate 89

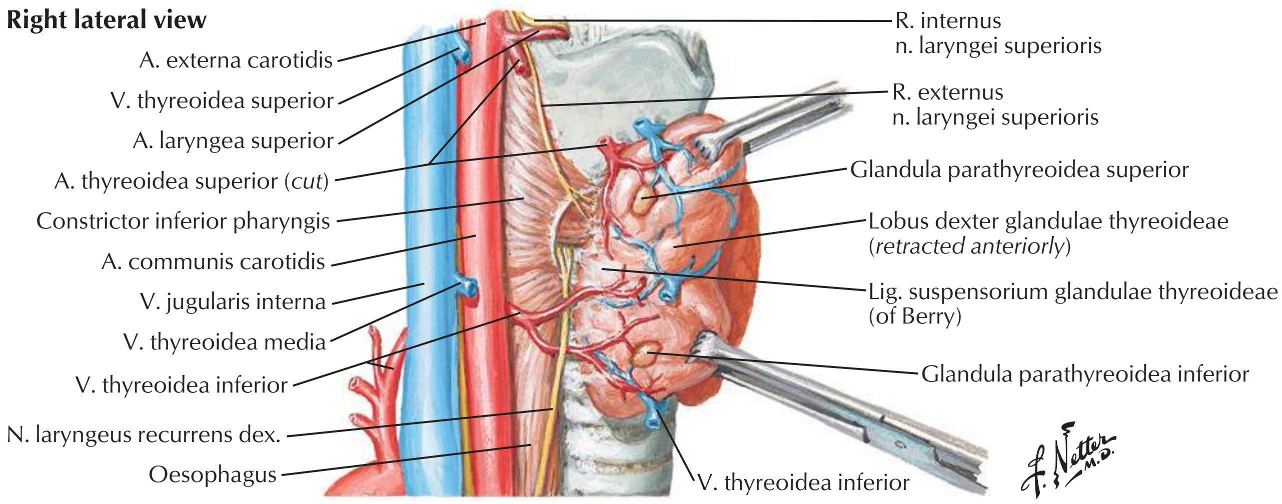

Constrictor superior pharyngis
Constrictor medius pharyngis
Tip of Cornu majus ossis hyoidei
Constrictor inferior pharyngis
Raphe pharyngis
Zone of sparse muscle fibers
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
Stratum circulare tunicae muscularis oesophagi (in V-shaped area of sparse longitudinal muscle fibers)
Stratum longitudinale tunicae muscularis oesophagi
V. thyroidea inferior
Trachea
Bulbus inferior v. jugularis internae
A. vertebralis
A. and V. subclavia sin.
A. and V. thoracica interna
V. brachiocephalica sin.
N. laryngeus recurrens sin.
Arcus aortae
N. vagus sin. (CN X)
A. externa carotidis
A. interna carotidis
A. facialis
A. lingualis
N. laryngeus superior
R. internus
R. externus
A. thyreoidea superior
A. laryngea superior
A. communis carotidis
N. vagus (CN X)
V. jugularis interna
Lobus dexter glandulae thyreoideae
Glandula parathyreoidea superior
A. cervicalis ascendens
Glandula parathyreoidea inferior
A. thyreoidea inferior
N. laryngeus recurrens dex.
A. transversa colli
A. suprascapularis
Truncus thyreocervicalis
A. and V. subclavia dex.
V. brachiocephalica dex.
Truncus brachiocephalicus
N. vagus dex. (CN X)
V. cava superior
F. Netter M.D.

Parathyroid Glands

See also Plates 80, 88, 92



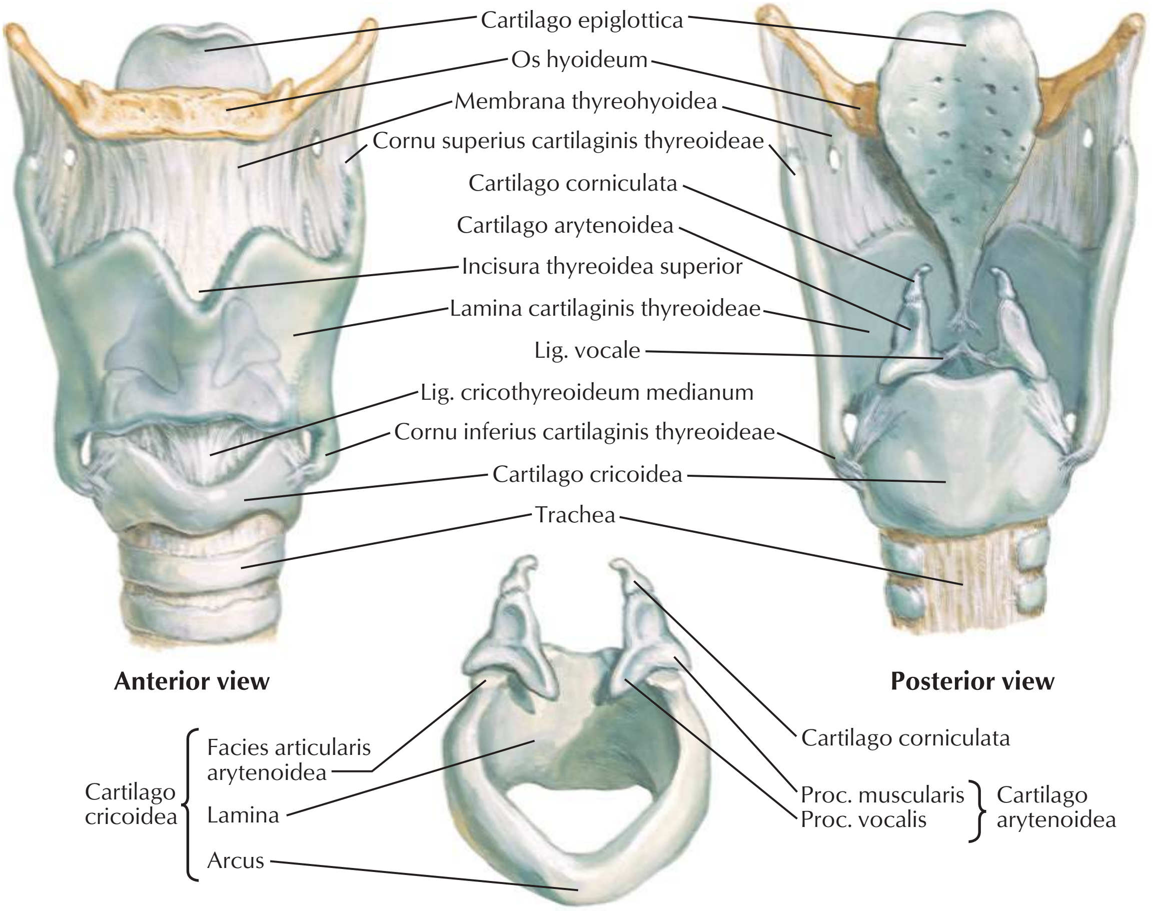
Posterior view
N. laryngeus superior
R. internus
R. externus
N. vagus (CN X)
Epiglottis
A. thyreoidea superior
A. communis carotidis
Capsula fibrosa glandulae thyreoideae (cut)
Glandula parathyreoidea superior
Lobus sinister glandulae thyreoideae
A. cervicalis ascendens
Glandula parathyreoidea inferior
N. laryngeus recurrens sin.
Oesophagus
A. subclavia
Trachea
Membrana thyreohyoidea
Os hyoideum
A. externa carotidis
A. interna carotidis
A. thyreoidea superior
A. laryngea superior
Constrictor inferior pharyngis (cut)
A. communis carotidis
Capsula fibrosa glandulae thyreoideae (cut)
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
Glandula parathyreoidea superior
Lobus dexter glandulae thyreoideae
Glandula parathyreoidea inferior (may be more caudally located, even within mediastinum)
A. thyreoidea inferior
N. laryngeus recurrens dex.
A. transversa colli
A. suprascapularis
Truncus thyreocervicalis
A. vertebralis
A. subclavia
Truncus brachiocephalicus



Right lateral view
A. externa carotidis
V. thyreoidea superior
A. laryngea superior
A. thyreoidea superior (cut)
Constrictor inferior pharyngis
A. communis carotidis
V. jugularis interna
V. thyreoidea media
V. thyreoidea inferior
N. laryngeus recurrens dex.
Oesophagus
R. internus n. laryngei superioris
R. externus n. laryngei superioris
Glandula parathyreoidea superior
Lobus dexter glandulae thyreoideae (retracted anteriorly)
Lig. suspensorium glandulae thyreoideae (of Berry)
Glandula parathyreoidea inferior
V. thyreoidea inferior
F. Netter M.D.

Cartilages of Larynx

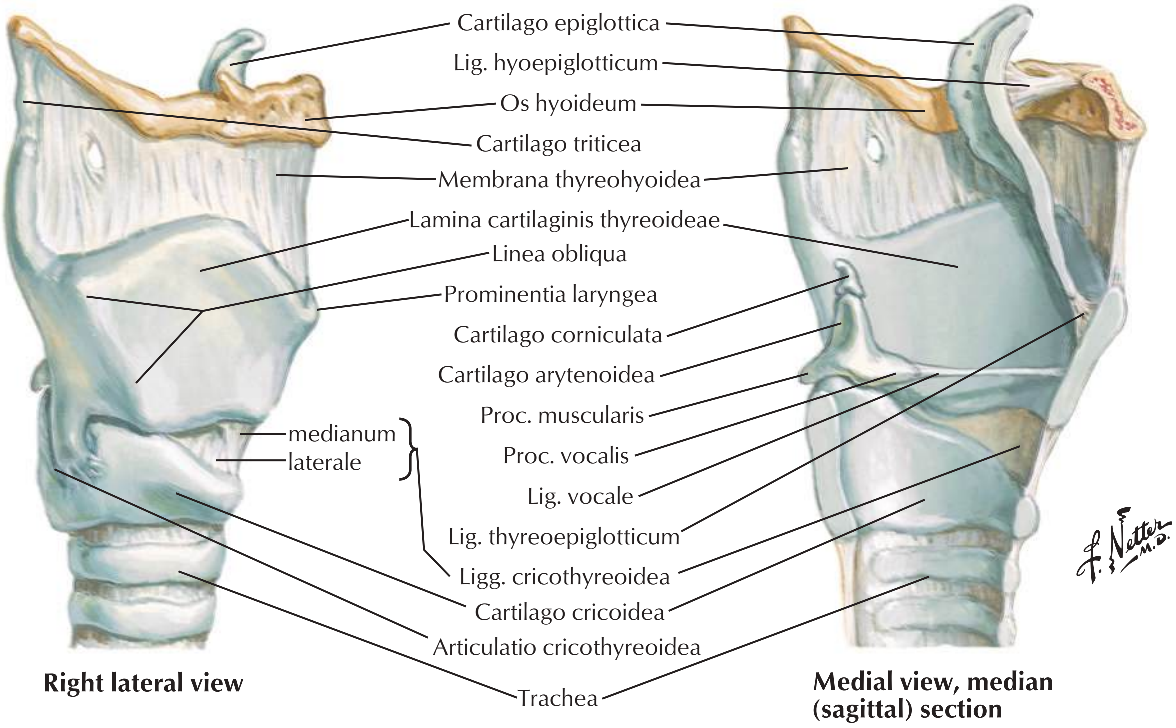
See also Plates 91, 92, 93


Cartilago epiglottica
Os hyoideum
Membrana thyreohyoidea
Cornu superius cartilaginis thyreoideae
Cartilago corniculata
Cartilago arytenoidea
Incisura thyreoidea superior
Lamina cartilaginis thyreoideae
Lig. vocale
Lig. cricothyreoideum medianum
Cornu inferius cartilaginis thyreoideae
Cartilago cricoidea
Trachea
Cartilago cricoidea
Facies articularis arytenoidea
Lamina
Arcus
Cartilago corniculata
Proc. muscularis
Proc. vocalis
Cartilago arytenoidea

Anterior view

Posterior view

Anterosuperior view

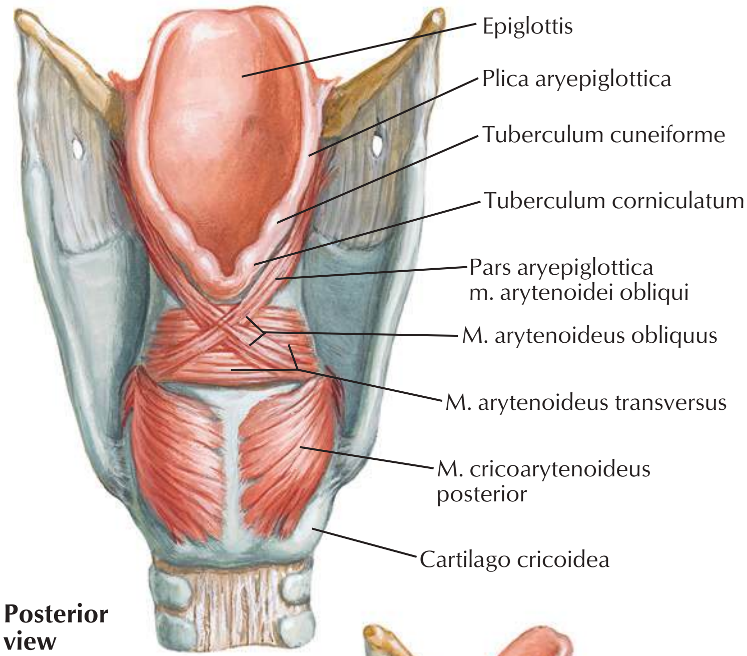

Cartilago epiglottica
Lig. hyoepiglotticum
Os hyoideum
Cartilago triticea
Membrana thyreohyoidea
Lamina cartilaginis thyreoideae
Linea obliqua
Prominentia laryngea
Cartilago corniculata
Cartilago arytenoidea
Proc. muscularis
Proc. vocalis
Lig. vocale
Lig. thyreoepiglotticum
medianum
laterale
Ligg. cricothyreoidea
Cartilago cricoidea
Articulatio cricothyreoidea
Trachea
F. Netter M.D.

Right lateral view

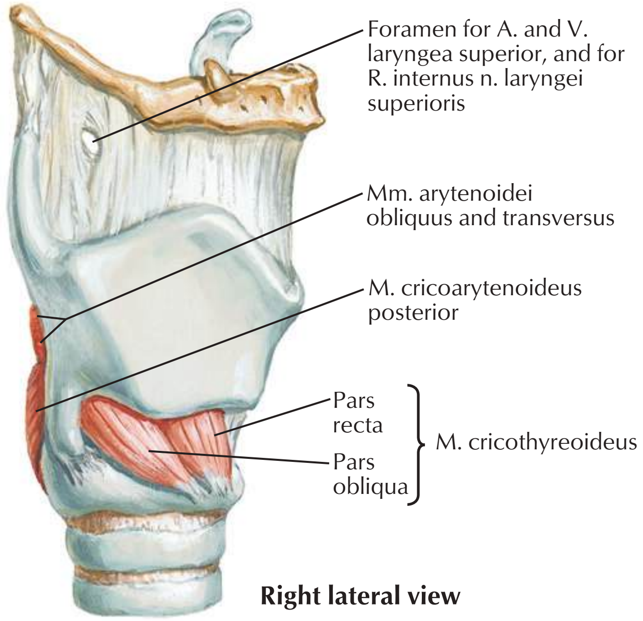
Medial view, median (sagittal) section

Intrinsic Muscles of Larynx

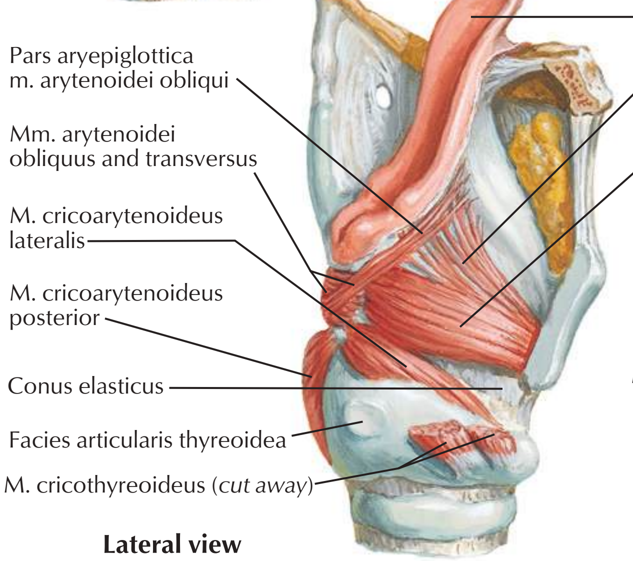
See also Plates 90, 92, 93


Epiglottis
Plica aryepiglottica
Tuberculum cuneiforme
Tuberculum corniculatum
Pars aryepiglottica m. arytenoidei obliqui
M. arytenoideus obliquus
M. arytenoideus transversus
M. cricoarytenoideus posterior
Cartilago cricoidea

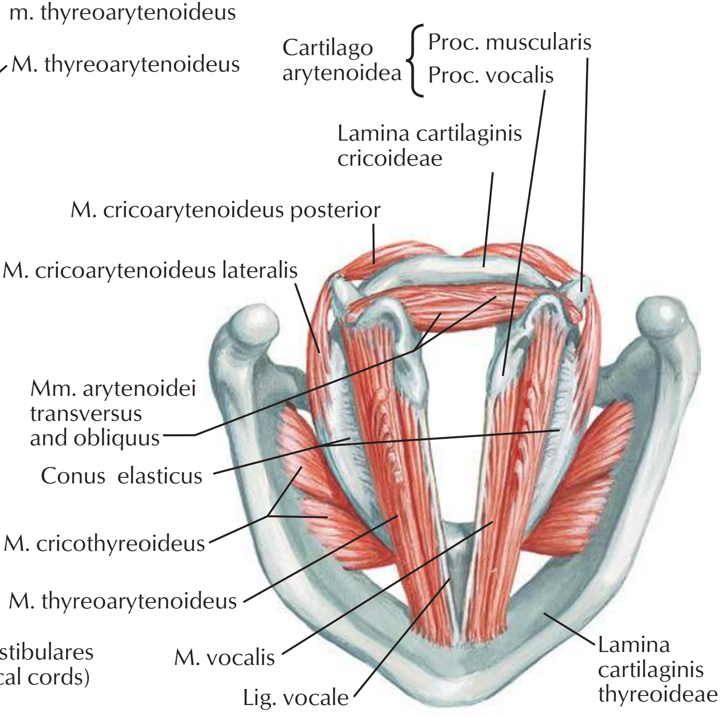
Posterior view


Foramen for A. and V. laryngea superior, and for R. internus n. laryngei superioris
Mm. arytenoidei obliquus and transversus
M. cricoarytenoideus posterior
Pars recta
Pars obliqua
M. cricothyreoideus

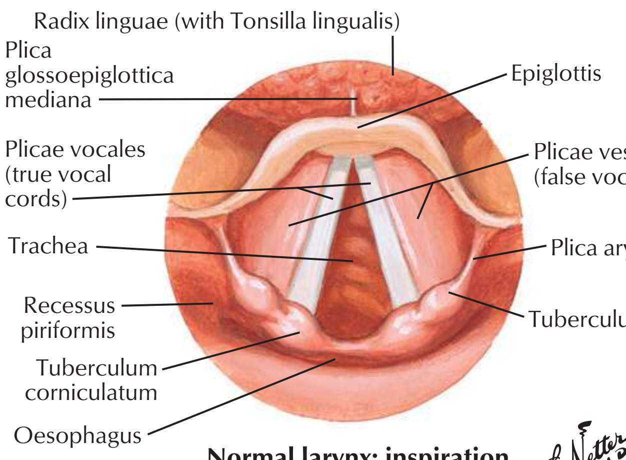
Right lateral view


Epiglottis
Pars thyreoepiglottica m. thyreoarytenoideus
M. thyreoarytenoideus
Pars aryepiglottica m. arytenoidei obliqui
Mm. arytenoidei obliquus and transversus
M. cricoarytenoideus lateralis
M. cricoarytenoideus posterior
Conus elasticus
Facies articularis thyreoidea
M. cricothyreoideus (*cut away*)

Lateral view

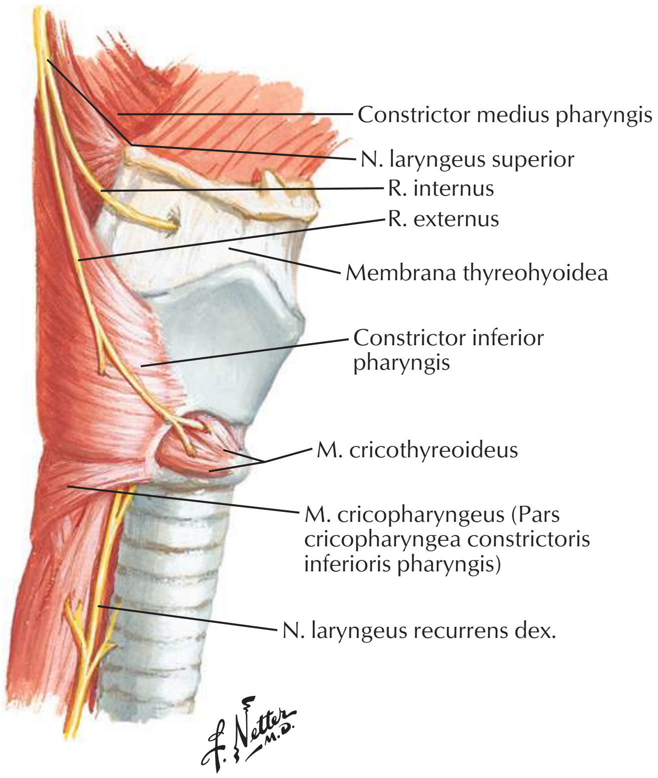

Cartilago arytenoidea
Proc. muscularis
Proc. vocalis
Lamina cartilaginis cricoideae
M. cricoarytenoideus posterior
M. cricoarytenoideus lateralis
Mm. arytenoidei transversus and obliquus
Conus elasticus
M. cricothyreoideus
M. thyreoarytenoideus
M. vocalis
Lig. vocale
Lamina cartilaginis thyreoideae

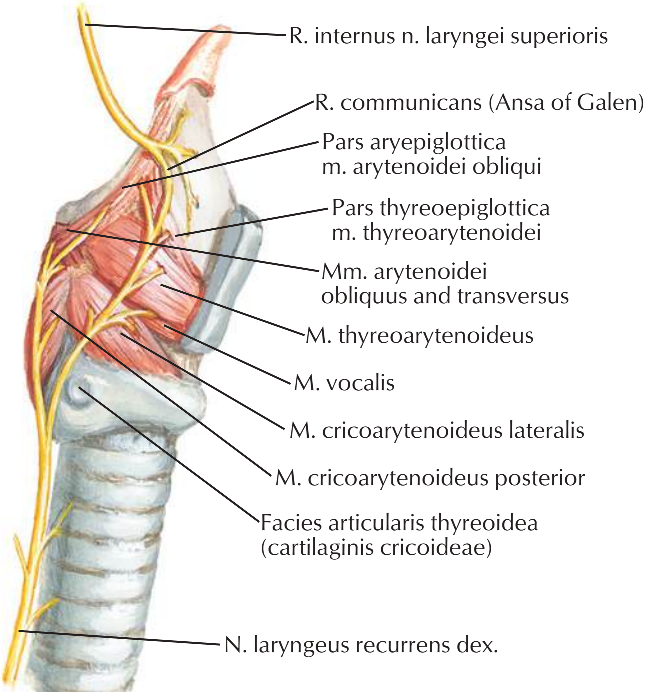
Superior view


Radix linguae (with Tonsilla lingualis)
Plica glossoepiglottica mediana
Epiglottis
Plicae vocales (true vocal cords)
Plicae vestibulares (false vocal cords)
Trachea
Plica aryepiglottica
Recessus piriformis
Tuberculum cuneiforme
Tuberculum corniculatum
Oesophagus

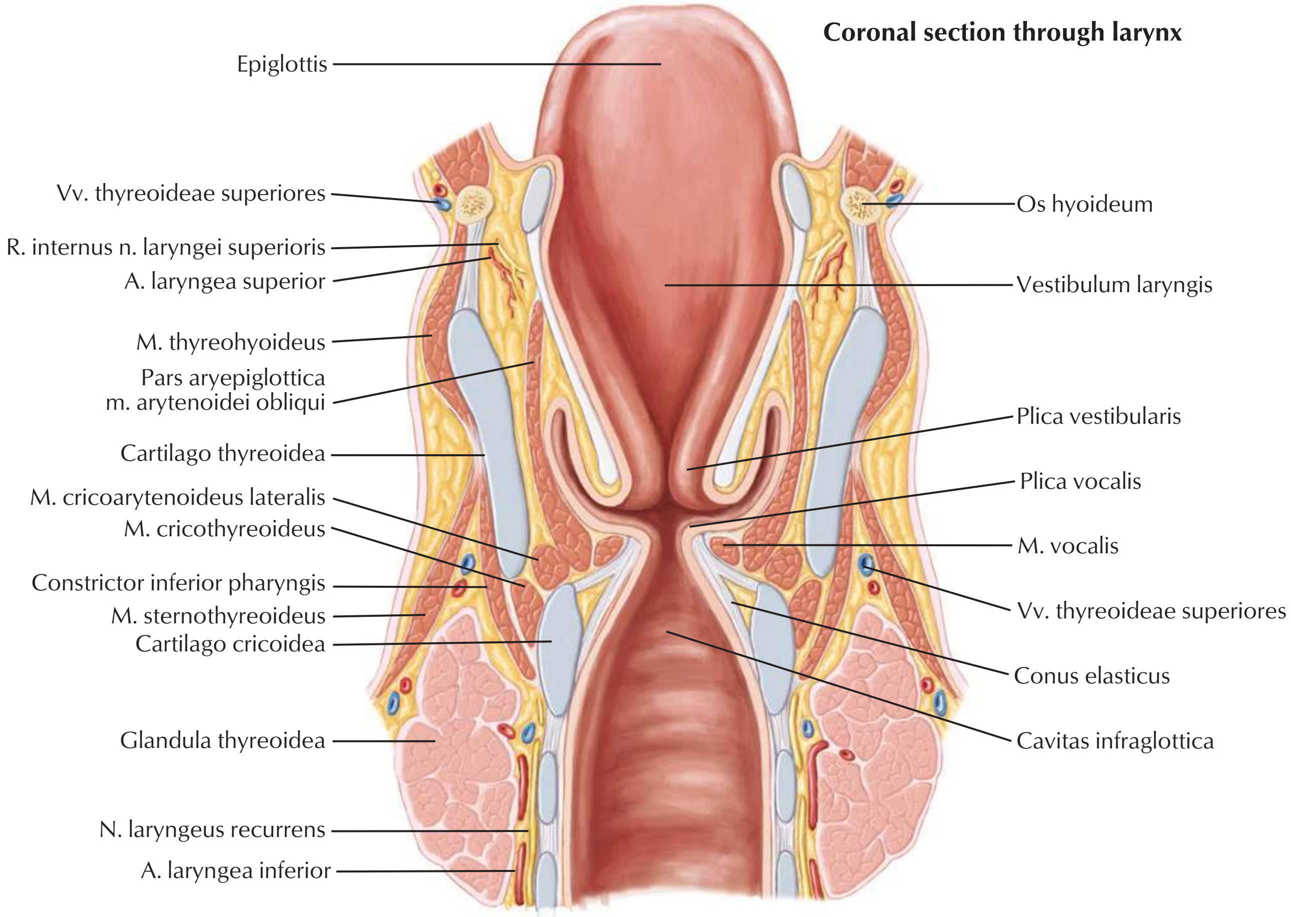
Normal larynx: inspiration

See also Plates 90, 91, 93


Constrictor medius pharyngis
N. laryngeus superior
R. internus
R. externus
Membrana thyreohyoidea
Constrictor inferior pharyngis
M. cricothyreoideus
M. cricopharyngeus (Pars cricopharyngea constrictoris inferioris pharyngis)
N. laryngeus recurrens dex.


R. internus n. laryngei superioris
R. communicans (Ansa of Galen)
Pars aryepiglottica m. arytenoidei obliqui
Pars thyreoepiglottica m. thyreoarytenoidei
Mm. arytenoidei obliquus and transversus
M. thyreoarytenoideus
M. vocalis
M. cricoarytenoideus lateralis
M. cricoarytenoideus posterior
Facies articularis thyreoidea (cartilaginis cricoideae)
N. laryngeus recurrens dex.

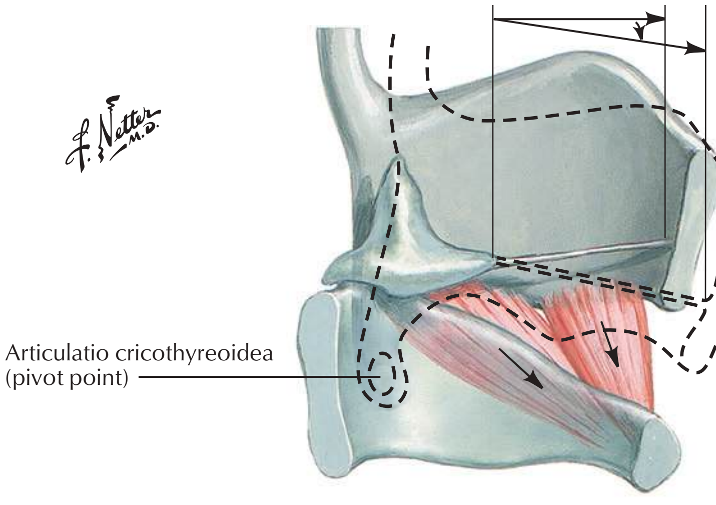
Right lateral view: thyroid cartilage lamina removed


Coronal section through larynx

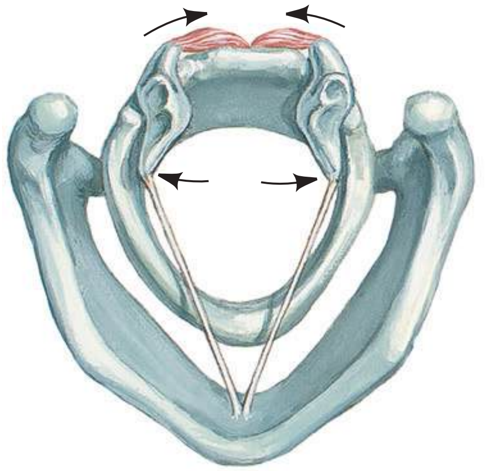
Epiglottis
Vv. thyreoideae superiores
R. internus n. laryngei superioris
A. laryngea superior
M. thyreohyoideus
Pars aryepiglottica m. arytenoidei obliqui
Cartilago thyreoidea
M. cricoarytenoideus lateralis
M. cricothyreoideus
Constrictor inferior pharyngis
M. sternothyreoideus
Cartilago cricoidea
Glandula thyreoidea
N. laryngeus recurrens
A. laryngea inferior
Os hyoideum
Vestibulum laryngis
Plica vestibularis
Plica vocalis
M. vocalis
Vv. thyreoideae superiores
Conus elasticus
Cavitas infraglottica

Action of Intrinsic Muscles of Larynx

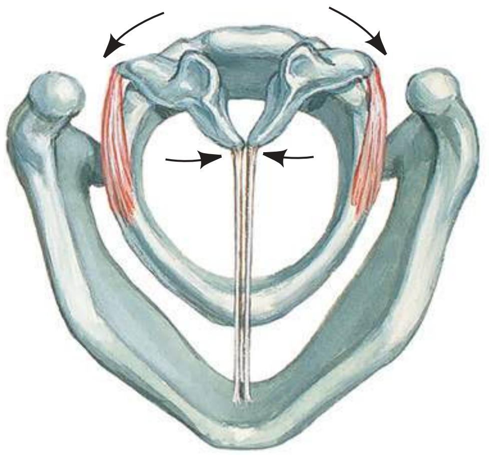
See also Plates 90, 91, 92



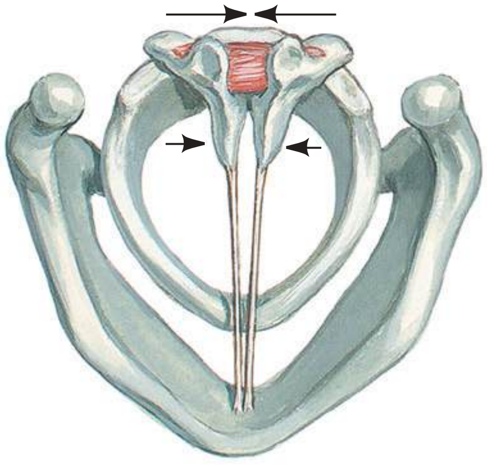
Action of M. cricothyreoideus
Lengthening (increasing tension) of Lig. vocale



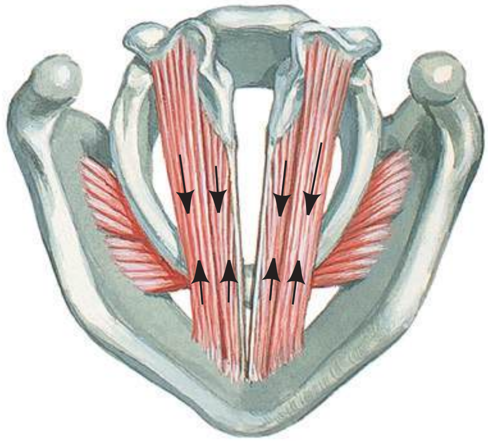
Action of M. cricoarytenoideus posterior
Abduction of Lig. vocale



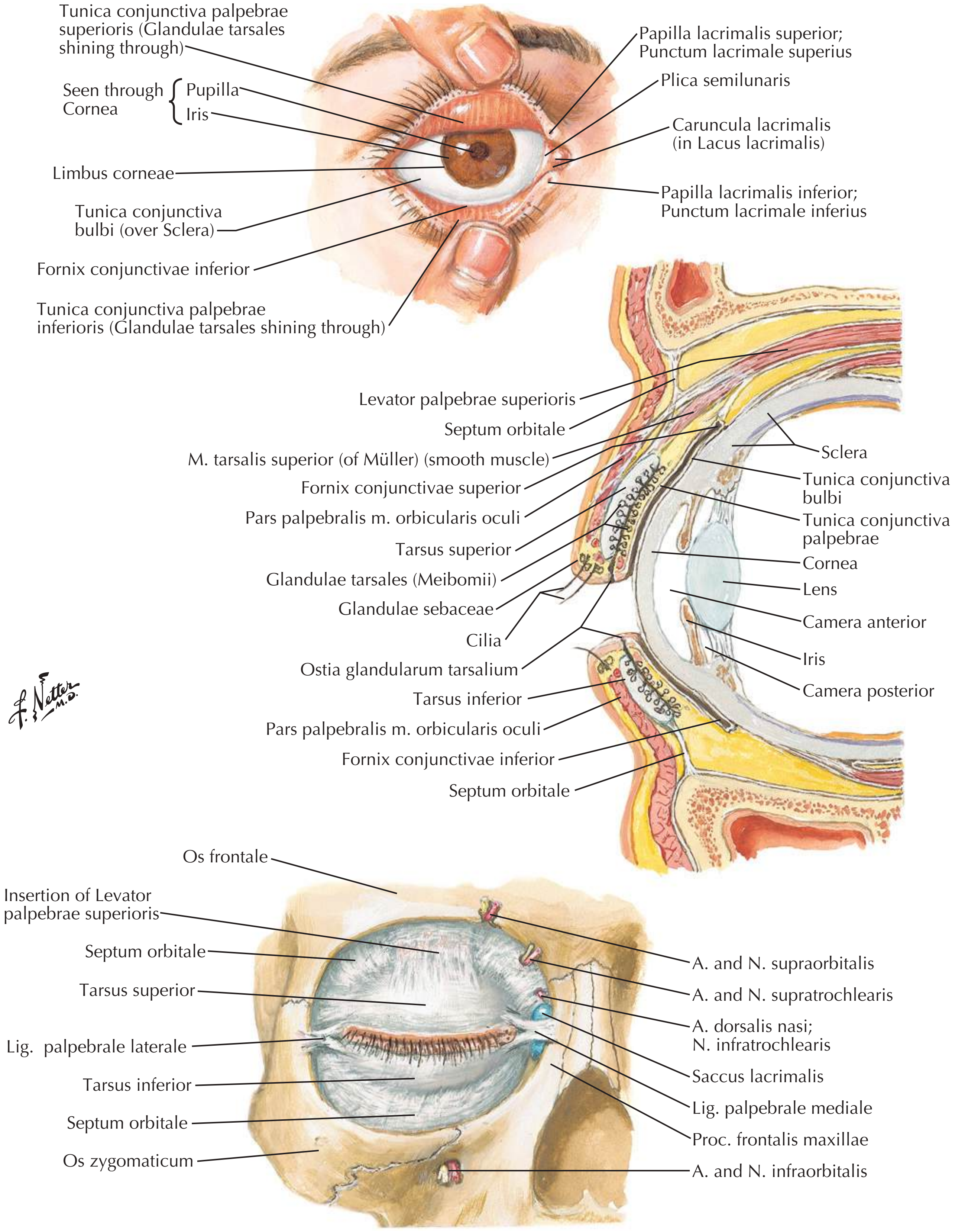
Action of M. cricoarytenoideus lateralis
Adduction of Lig. vocale



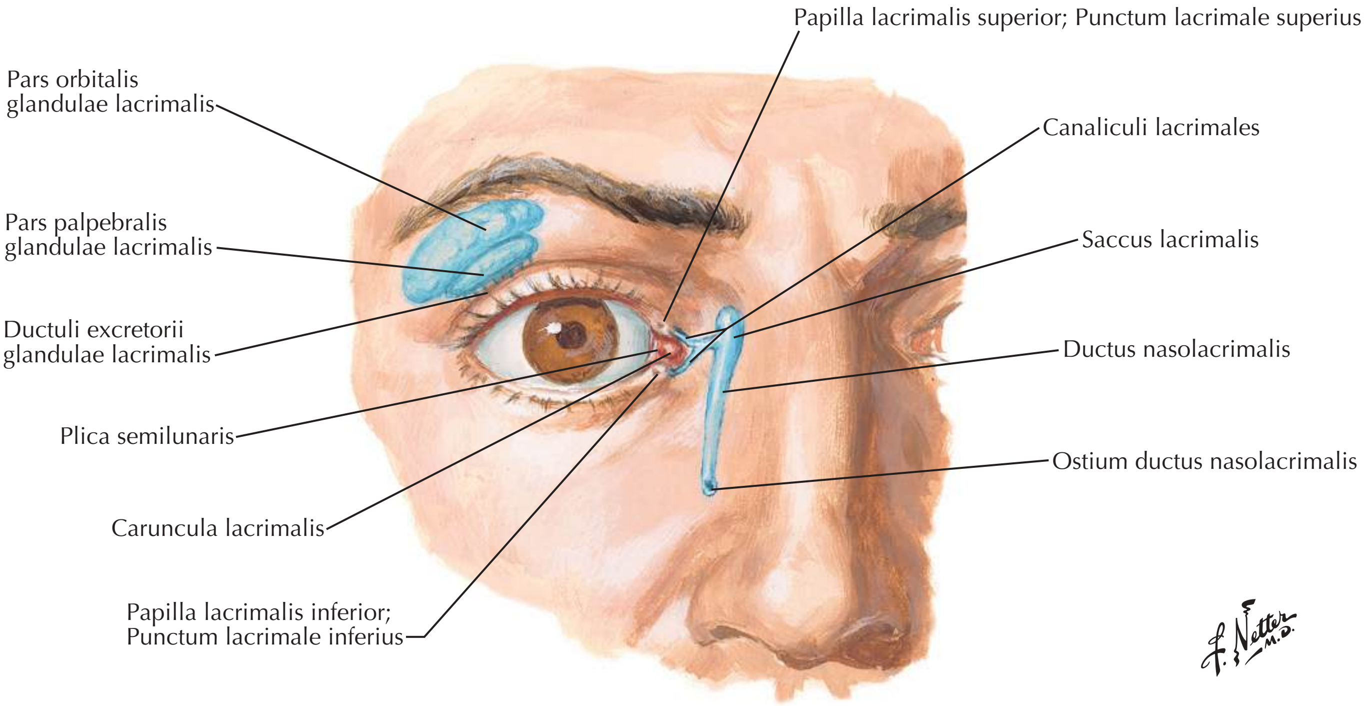
Action of Mm. arytenoidei transversus and obliquus
Adduction of Lig. vocale

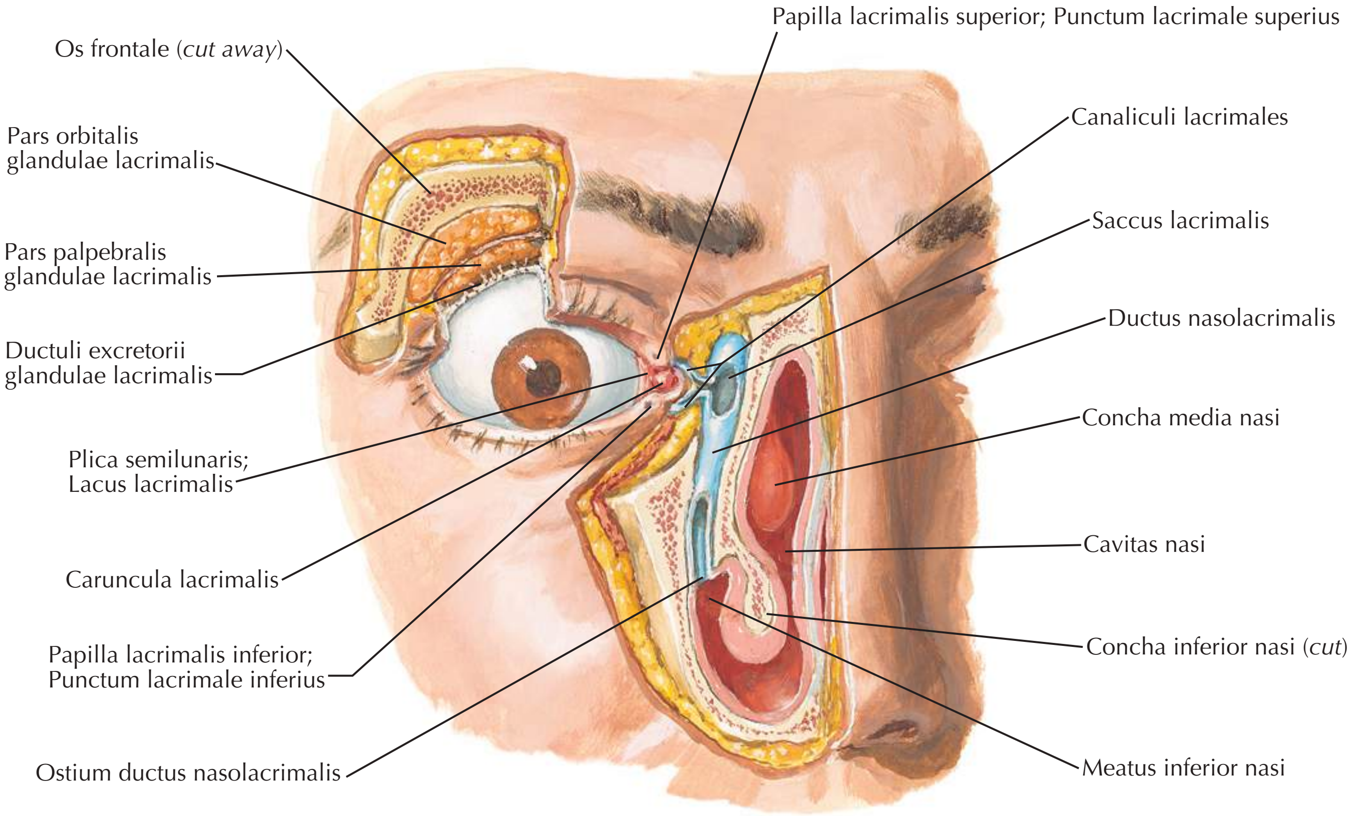


Action of Mm. vocalis and thyreoarytenoideus
Shortening (relaxation) of Lig. vocale


Tunica conjunctiva palpebrae superioris (Glandulae tarsales shining through)
Seen through Cornea
Pupilla
Iris
Limbus corneae
Tunica conjunctiva bulbi (over Sclera)
Fornix conjunctivae inferior
Tunica conjunctiva palpebrae inferioris (Glandulae tarsales shining through)
Papilla lacrimalis superior; Punctum lacrimale superius
Plica semilunaris
Caruncula lacrimalis (in Lacus lacrimalis)
Papilla lacrimalis inferior; Punctum lacrimale inferius
Levator palpebrae superioris
Septum orbitale
M. tarsalis superior (of Müller) (smooth muscle)
Fornix conjunctivae superior
Pars palpebralis m. orbicularis oculi
Tarsus superior
Glandulae tarsales (Meibomii)
Glandulae sebaceae
Cilia
Ostia glandularum tarsalium
Tarsus inferior
Pars palpebralis m. orbicularis oculi
Fornix conjunctivae inferior
Septum orbitale
Sclera
Tunica conjunctiva bulbi
Tunica conjunctiva palpebrae
Cornea
Lens
Camera anterior
Iris
Camera posterior
F. Netter M.D.
Os frontale
Insertion of Levator palpebrae superioris
Septum orbitale
Tarsus superior
Lig. palpebrale laterale
Tarsus inferior
Septum orbitale
Os zygomaticum
A. and N. supraorbitalis
A. and N. supratrochlearis
A. dorsalis nasi; N. infratrochlearis
Saccus lacrimalis
Lig. palpebrale mediale
Proc. frontalis maxillae
A. and N. infraorbitalis

See also Plate 144

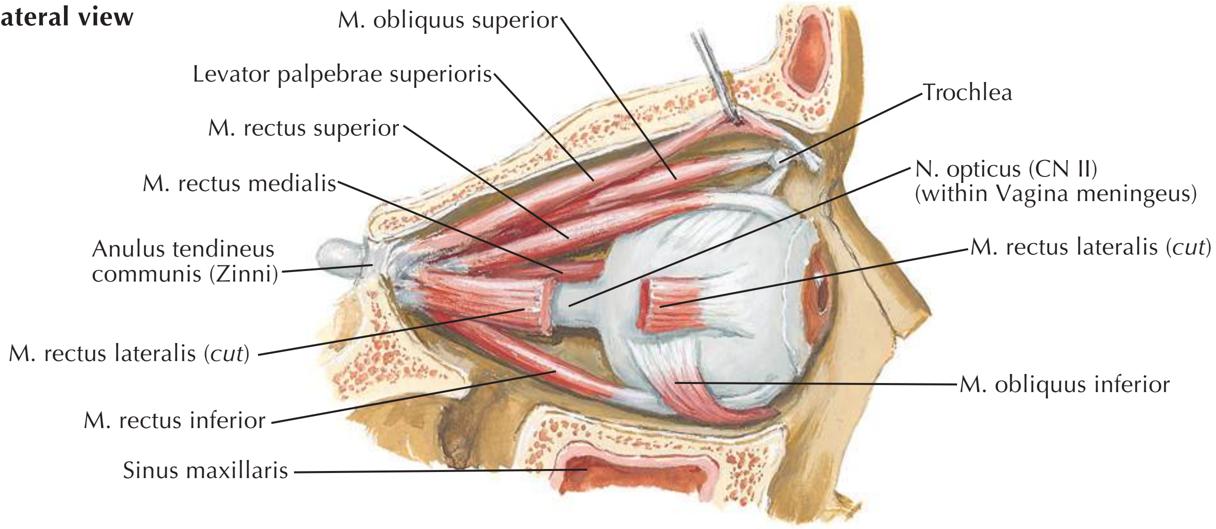

Papilla lacrimalis superior; Punctum lacrimale superius
Pars orbitalis glandulae lacrimalis
Canaliculi lacrimales
Pars palpebralis glandulae lacrimalis
Saccus lacrimalis
Ductuli excretorii glandulae lacrimalis
Ductus nasolacrimalis
Plica semilunaris
Ostium ductus nasolacrimalis
Caruncula lacrimalis
Papilla lacrimalis inferior; Punctum lacrimale inferius


Papilla lacrimalis superior; Punctum lacrimale superius
Os frontale (*cut away*)
Pars orbitalis glandulae lacrimalis
Canaliculi lacrimales
Saccus lacrimalis
Pars palpebralis glandulae lacrimalis
Ductus nasolacrimalis
Ductuli excretorii glandulae lacrimalis
Concha media nasi
Plica semilunaris; Lacus lacrimalis
Cavitas nasi
Caruncula lacrimalis
Concha inferior nasi (*cut*)
Papilla lacrimalis inferior; Punctum lacrimale inferius
Ostium ductus nasolacrimalis
Meatus inferior nasi

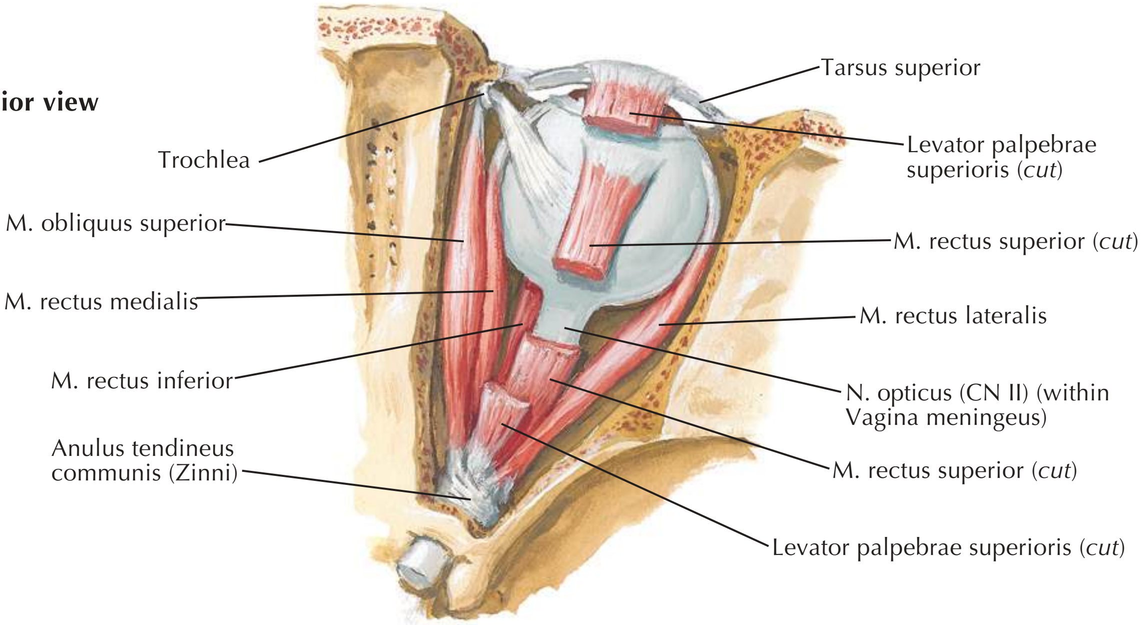
Extrinsic Eye Muscles

See also Plate 97

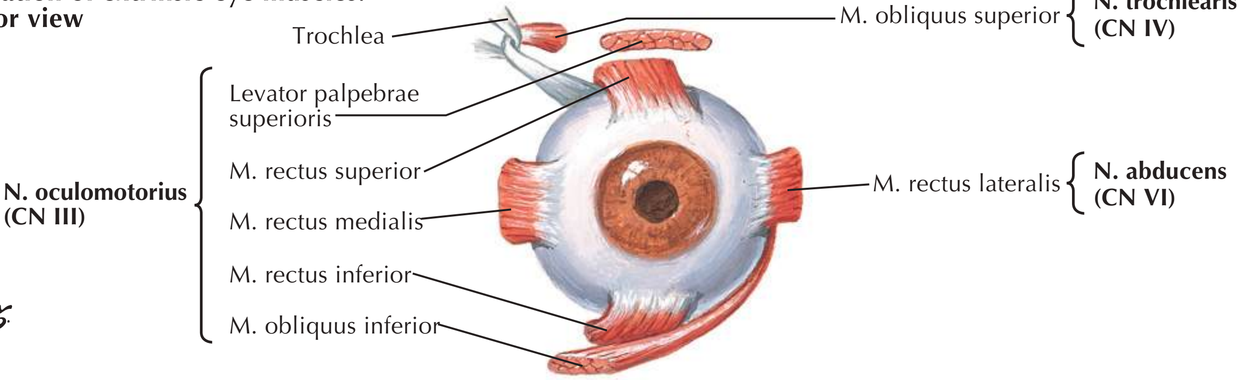
Right lateral view


M. obliquus superior
Levator palpebrae superioris
M. rectus superior
M. rectus medialis
Anulus tendineus communis (Zinni)
M. rectus lateralis (*cut*)
M. rectus inferior
Sinus maxillaris
Trochlea
N. opticus (CN II) (within Vagina meningeus)
M. rectus lateralis (*cut*)
M. obliquus inferior

Superior view


Trochlea
M. obliquus superior
M. rectus medialis
M. rectus inferior
Anulus tendineus communis (Zinni)
Tarsus superior
Levator palpebrae superioris (*cut*)
M. rectus superior (*cut*)
M. rectus lateralis
N. opticus (CN II) (within Vagina meningeus)
M. rectus superior (*cut*)
Levator palpebrae superioris (*cut*)

Innervation of extrinsic eye muscles: anterior view

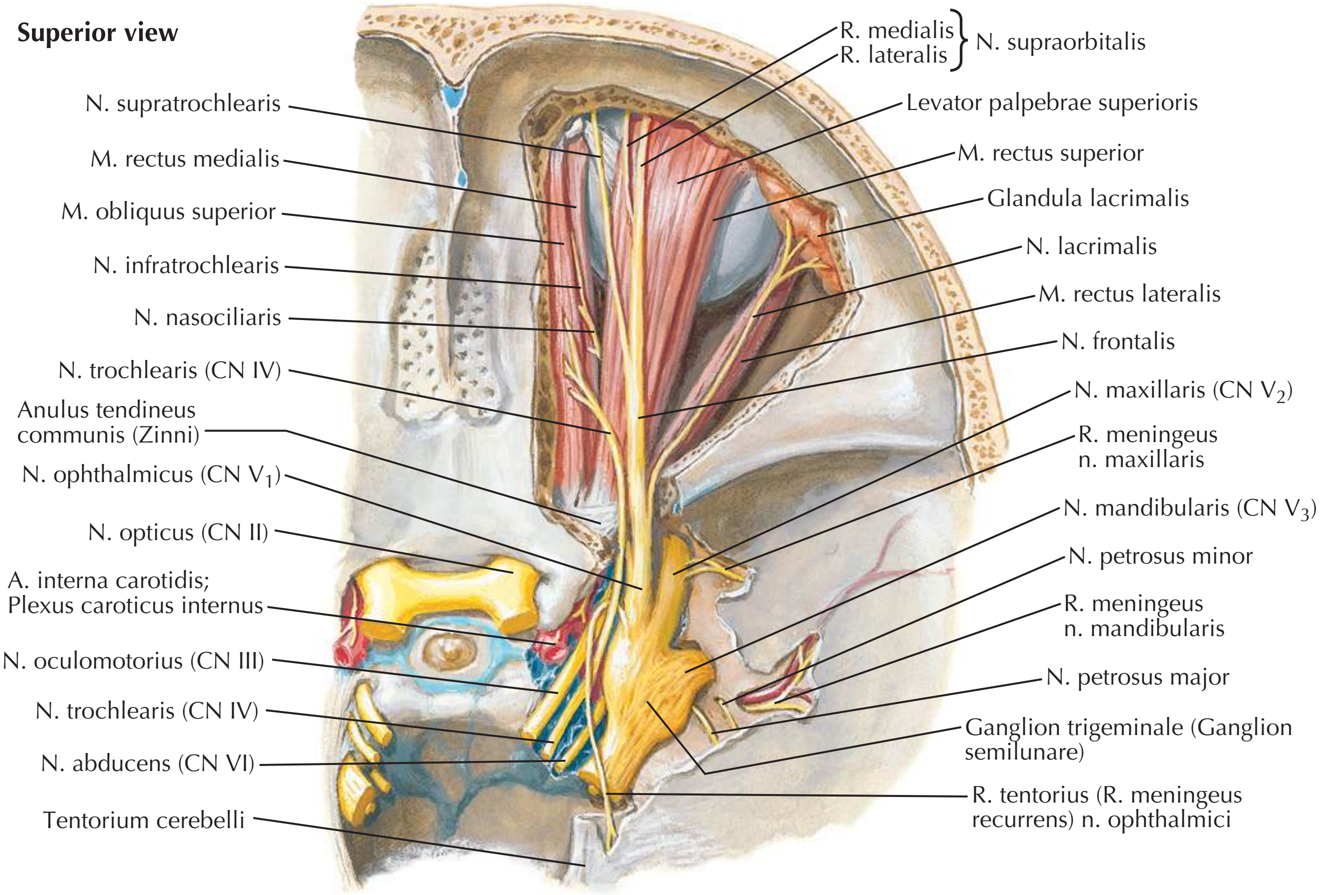

Trochlea
M. obliquus superior
N. trochlearis (CN IV)
Levator palpebrae superioris
M. rectus superior
M. rectus medialis
M. rectus inferior
M. obliquus inferior
N. oculomotorius (CN III)
M. rectus lateralis
N. abducens (CN VI)

F. Netter M.D.

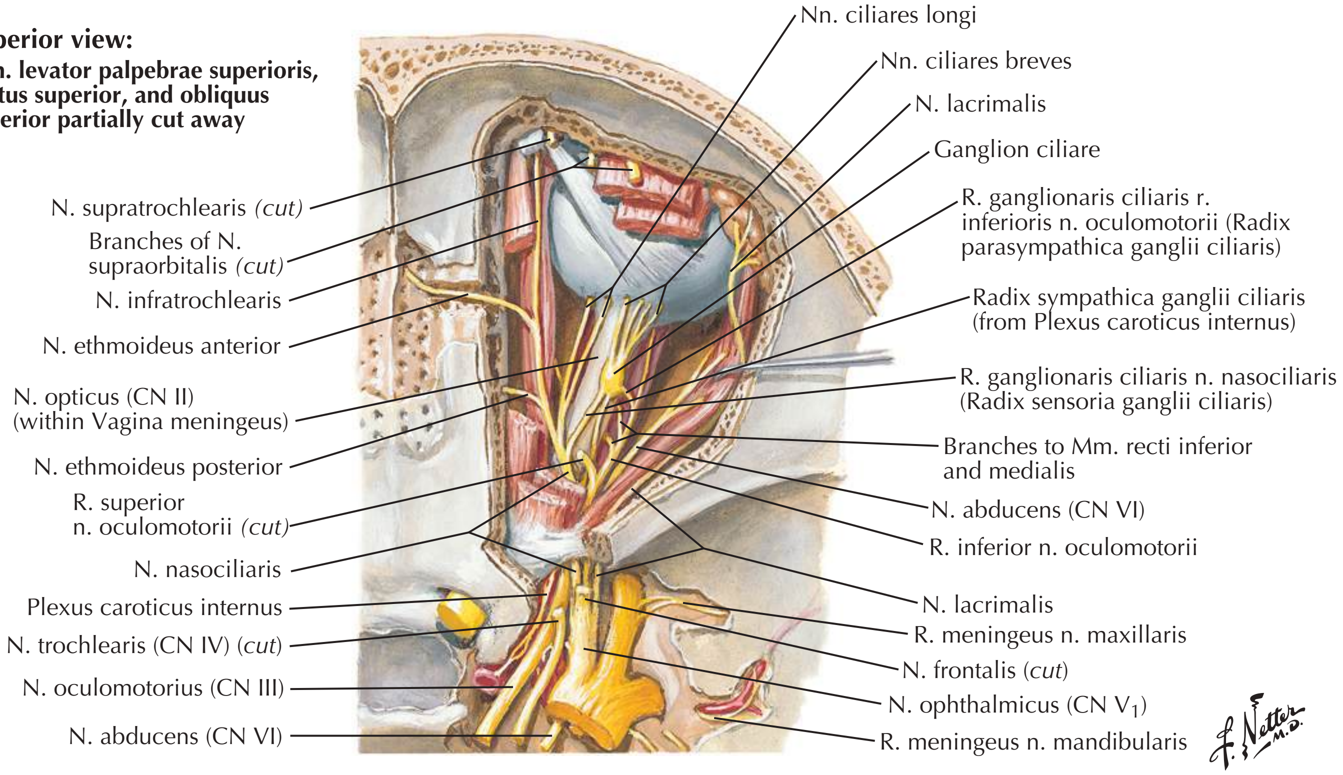
Nerves of Orbit

See also Plates 61, 132, 133

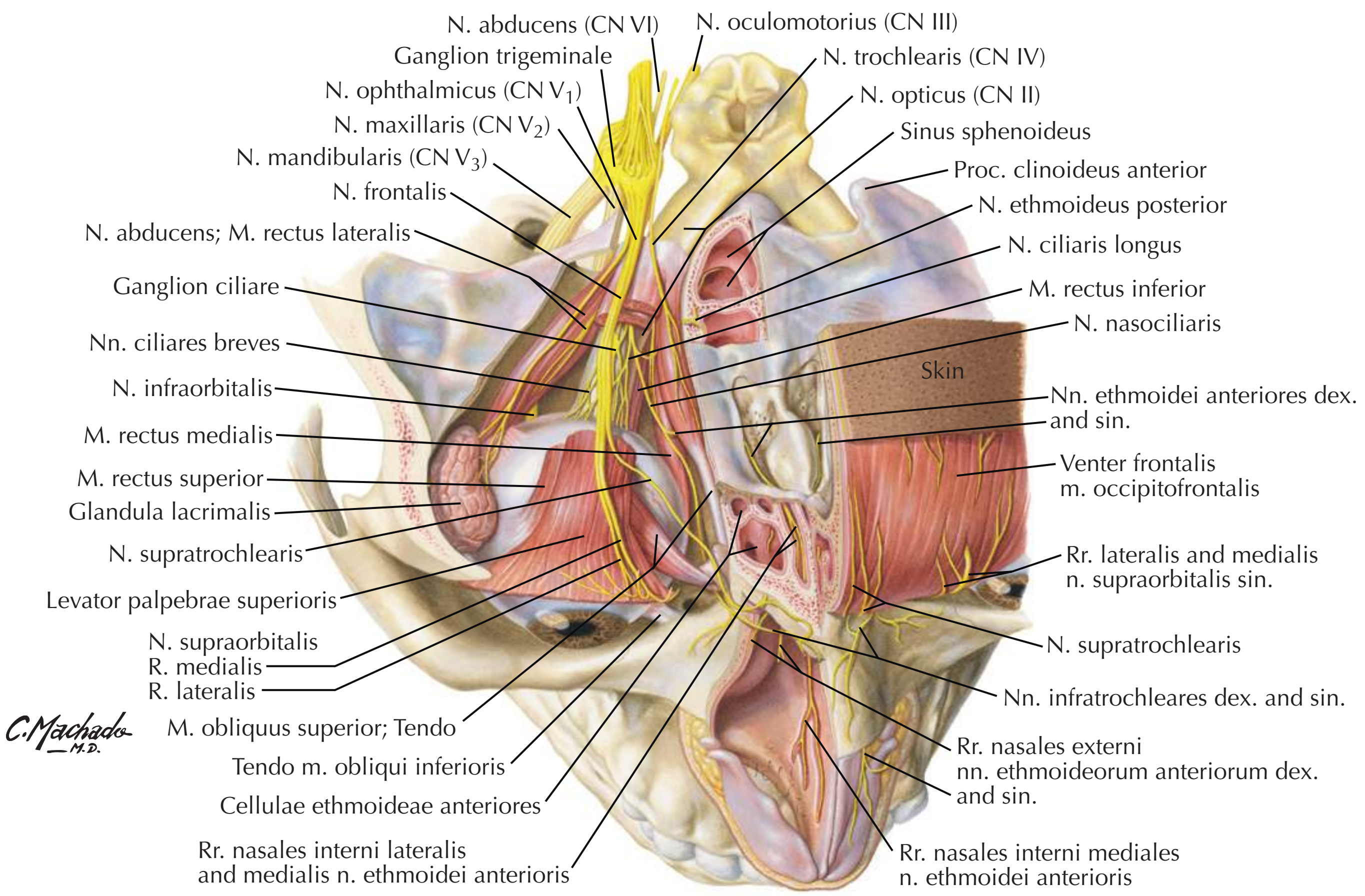
Superior view

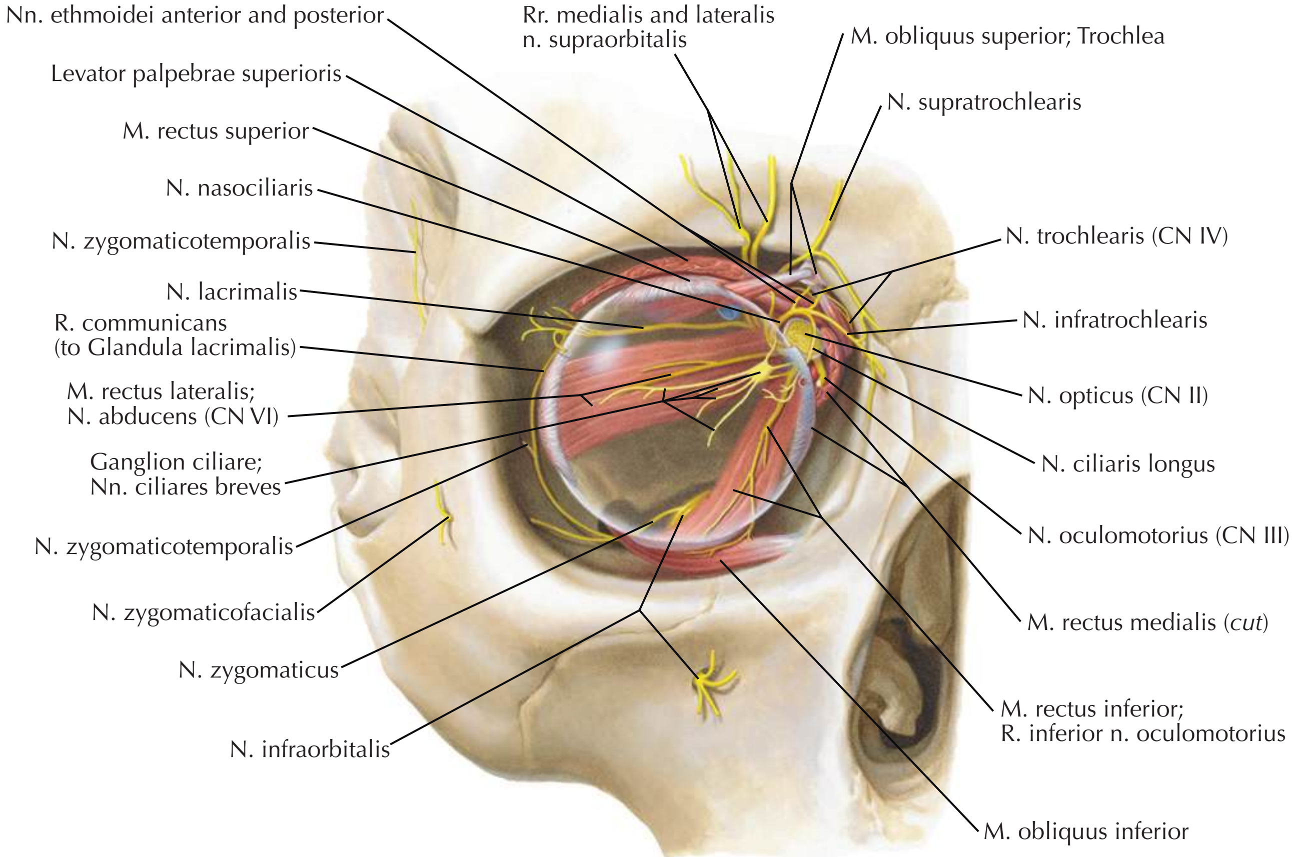

R. medialis
R. lateralis
N. supraorbitalis
N. supratrochlearis
Levator palpebrae superioris
M. rectus medialis
M. rectus superior
M. obliquus superior
Glandula lacrimalis
N. infratrochlearis
N. lacrimalis
N. nasociliaris
M. rectus lateralis
N. frontalis
N. trochlearis (CN IV)
N. maxillaris (CN V_2)
Anulus tendineus communis (Zinni)
R. meningeus n. maxillaris
N. ophthalmicus (CN V_1)
N. mandibularis (CN V_3)
N. opticus (CN II)
N. petrosus minor
A. interna carotidis; Plexus caroticus internus
R. meningeus n. mandibularis
N. oculomotorius (CN III)
N. petrosus major
N. trochlearis (CN IV)
Ganglion trigeminale (Ganglion semilunare)
N. abducens (CN VI)
R. tentorius (R. meningeus recurrens) n. ophthalmici
Tentorium cerebelli

Superior view:
Mm. levator palpebrae superioris, rectus superior, and obliquus superior partially cut away


Nn. ciliares longi
Nn. ciliares breves
N. lacrimalis
Ganglion ciliare
N. supratrochlearis (cut)
R. ganglionaris ciliaris r. inferioris n. oculomotorii (Radix parasympathica ganglii ciliaris)
Branches of N. supraorbitalis (cut)
N. infratrochlearis
Radix sympathica ganglii ciliaris (from Plexus caroticus internus)
N. ethmoideus anterior
R. ganglionaris ciliaris n. nasociliaris (Radix sensoria ganglii ciliaris)
N. opticus (CN II) (within Vagina meningeus)
Branches to Mm. recti inferior and medialis
N. ethmoideus posterior
R. superior n. oculomotorii (cut)
N. abducens (CN VI)
R. inferior n. oculomotorii
N. nasociliaris
N. lacrimalis
Plexus caroticus internus
R. meningeus n. maxillaris
N. trochlearis (CN IV) (cut)
N. frontalis (cut)
N. oculomotorius (CN III)
N. ophthalmicus (CN V_1)
N. abducens (CN VI)
R. meningeus n. mandibularis

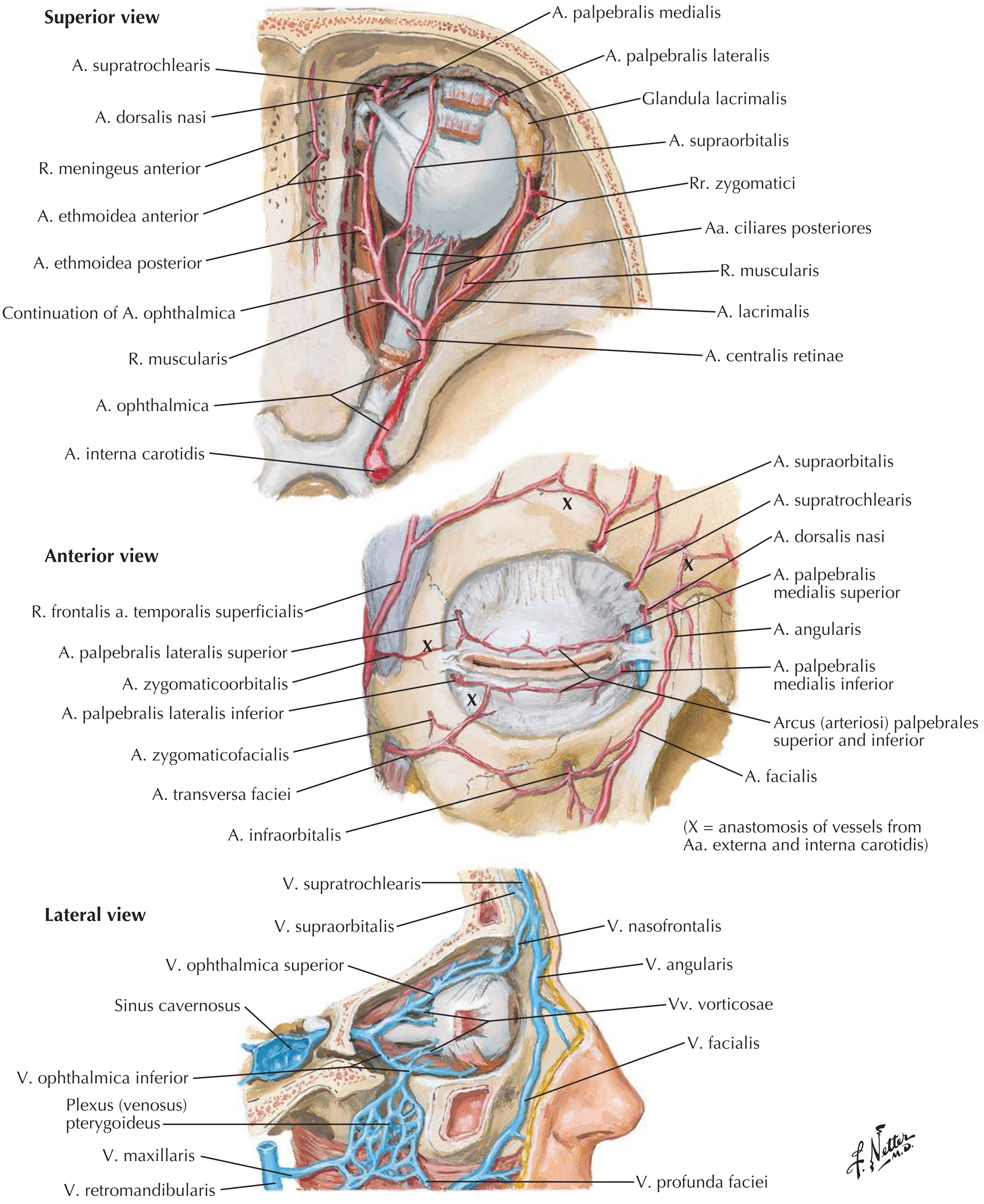
See also Plates 96, 97


N. abducens (CN VI)
N. oculomotorius (CN III)
Ganglion trigeminale
N. trochlearis (CN IV)
N. ophthalmicus (CN V_1)
N. opticus (CN II)
N. maxillaris (CN V_2)
Sinus sphenoideus
N. mandibularis (CN V_3)
Proc. clinoideus anterior
N. frontalis
N. ethmoideus posterior
N. abducens; M. rectus lateralis
N. ciliaris longus
Ganglion ciliare
M. rectus inferior
N. nasociliaris
Nn. ciliares breves
Skin
N. infraorbitalis
Nn. ethmoidei anteriores dex. and sin.
M. rectus medialis
Venter frontalis m. occipitofrontalis
M. rectus superior
Glandula lacrimalis
N. supratrochlearis
Rr. lateralis and medialis n. supraorbitalis sin.
Levator palpebrae superioris
N. supratrochlearis
N. supraorbitalis
R. medialis
R. lateralis
Nn. infratrochleares dex. and sin.
C.Machado M.D.
M. obliquus superior; Tendo
Rr. nasales externi nn. ethmoideorum anteriorum dex. and sin.
Tendo m. obliqui inferioris
Cellulae ethmoideae anteriores
Rr. nasales interni laterialis and medialis n. ethmoidei anterioris
Rr. nasales interni mediales n. ethmoidei anterioris


Nn. ethmoidei anterior and posterior
Rr. medialis and lateralis n. supraorbitalis
M. obliquus superior; Trochlea
Levator palpebrae superioris
N. supratrochlearis
M. rectus superior
N. nasociliaris
N. zygomaticotemporalis
N. trochlearis (CN IV)
N. lacrimalis
N. infratrochlearis
R. communicans (to Glandula lacrimalis)
N. opticus (CN II)
M. rectus lateralis; N. abducens (CN VI)
N. ciliaris longus
Ganglion ciliare; Nn. ciliares breves
N. oculomotorius (CN III)
N. zygomaticotemporalis
N. zygomaticofacialis
M. rectus medialis (cut)
N. zygomaticus
M. rectus inferior; R. inferior n. oculomotorius
N. infraorbitalis
M. obliquus inferior

Arteries and Veins of Orbit and Eyelids

See also Plates 10, 84



Superior view

A. palpebralis medialis
A. supratrochlearis
A. palpebralis lateralis
A. dorsalis nasi
Glandula lacrimalis
A. supraorbitalis
R. meningeus anterior
Rr. zygomatici
A. ethmoidea anterior
Aa. ciliares posteriores
A. ethmoidea posterior
R. muscularis
Continuation of A. ophthalmica
A. lacrimalis
R. muscularis
A. centralis retinae
A. ophthalmica
A. interna carotidis

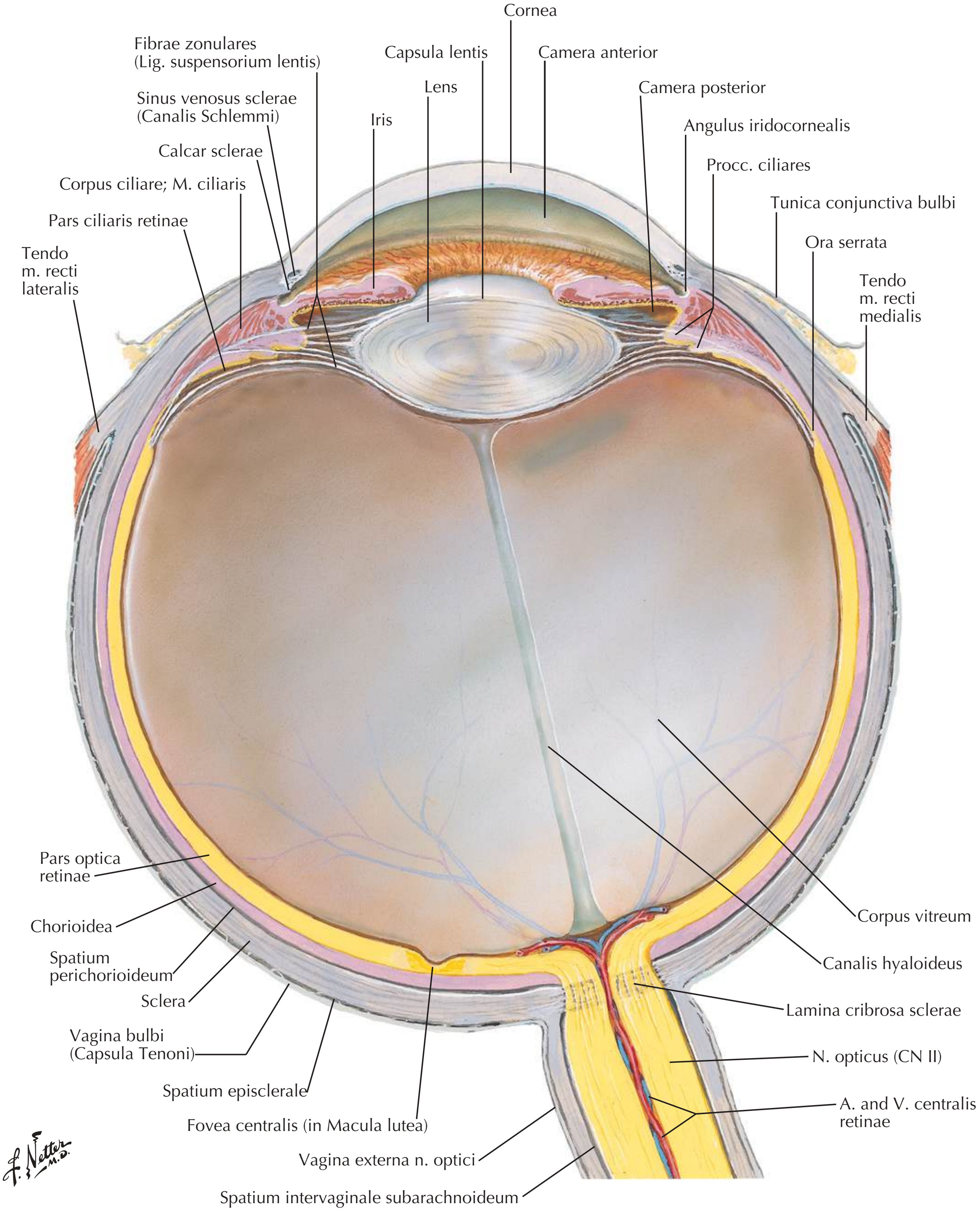
Anterior view

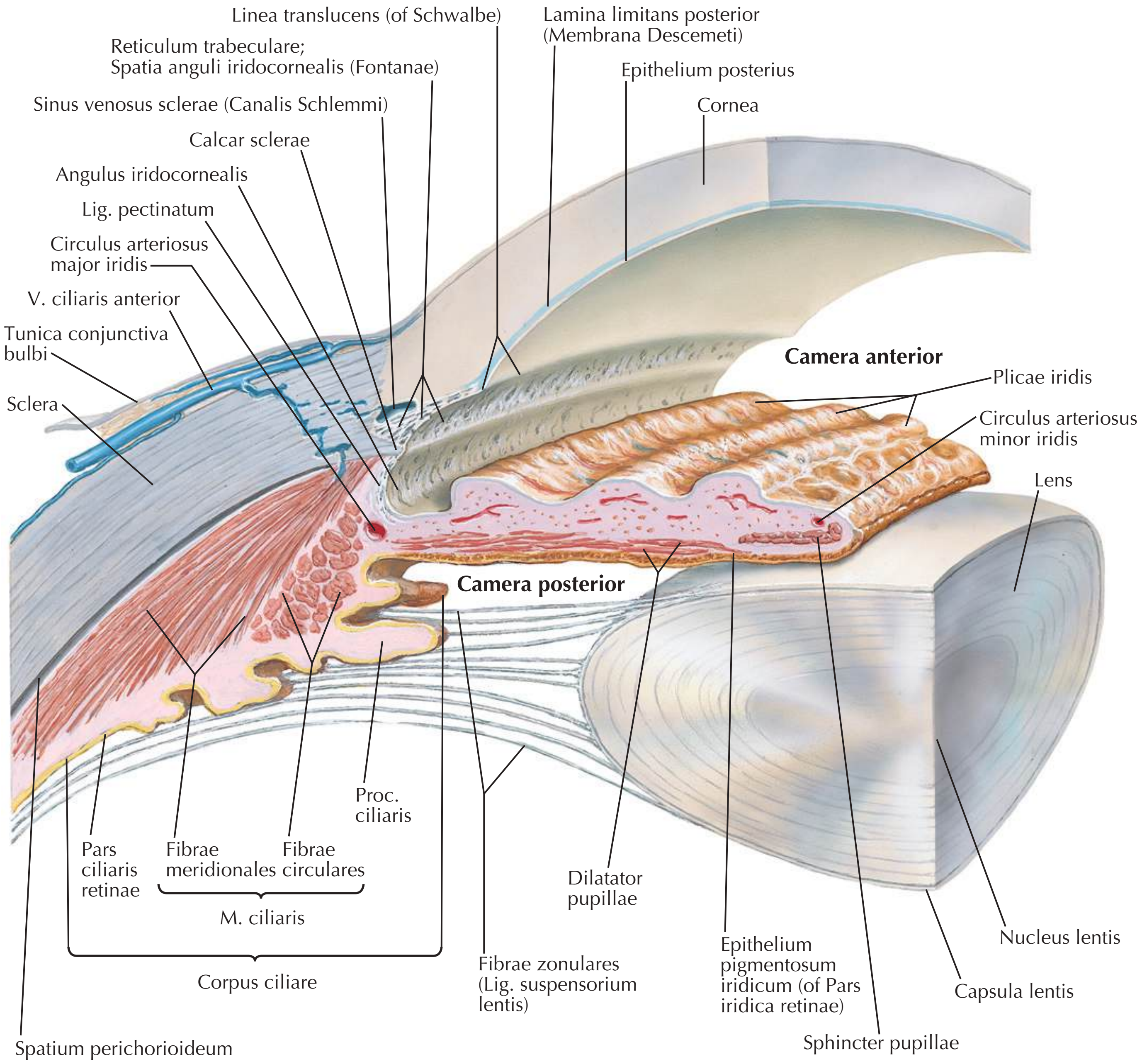
A. supraorbitalis
X
A. supratrochlearis
A. dorsalis nasi
X
A. palpebralis medialis superior
R. frontalis a. temporalis superficialis
A. angularis
A. palpebralis lateralis superior
X
A. palpebralis medialis inferior
A. zygomaticoorbitalis
X
A. palpebralis lateralis inferior
Arcus (arteriosi) palpebrales superior and inferior
A. zygomaticofacialis
A. facialis
A. transversa faciei
A. infraorbitalis

(X = anastomosis of vessels from Aa. externa and interna carotidis)

Lateral view

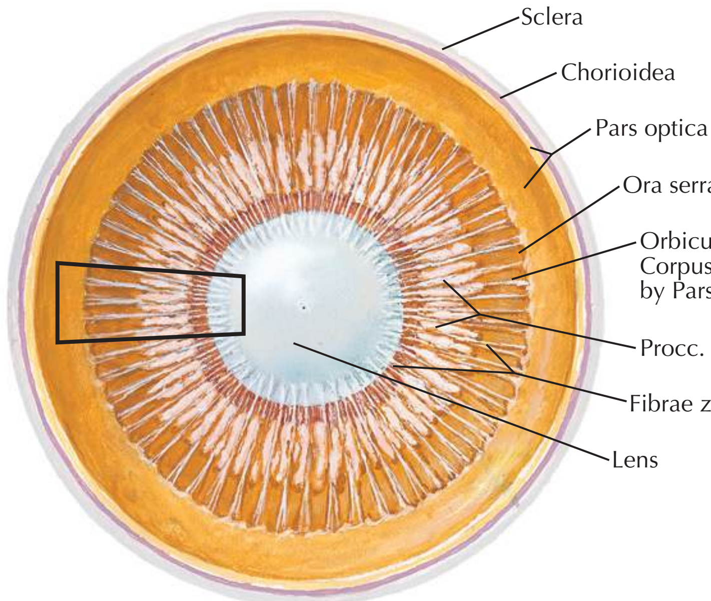
V. supratrochlearis
V. supraorbitalis
V. nasofrontalis
V. ophthalmica superior
V. angularis
Sinus cavernosus
Vv. vorticosae
V. facialis
V. ophthalmica inferior
Plexus (venosus) pterygoideus
V. maxillaris
V. retromandibularis
V. profunda faciei


Cornea
Fibrae zonulares
(Lig. suspensorium lentis)
Capsula lentis
Camera anterior
Lens
Camera posterior
Sinus venosus sclerae
(Canalis Schlemmi)
Iris
Angulus iridocornealis
Calcar sclerae
Procc. ciliares
Corpus ciliare; M. ciliaris
Tunica conjunctiva bulbi
Pars ciliaris retinae
Ora serrata
Tendo
m. recti
lateralis
Tendo
m. recti
medialis
Pars optica
retinae
Corpus vitreum
Chorioidea
Canalis hyaloideus
Spatium
perichorioideum
Lamina cribrosa sclerae
Sclera
Vagina bulbi
(Capsula Tenoni)
N. opticus (CN II)
Spatium episclerale
A. and V. centralis
retinae
Fovea centralis (in Macula lutea)
Vagina externa n. optici
Spatium intervaginale subarachnoideum
F. Netter M.D.

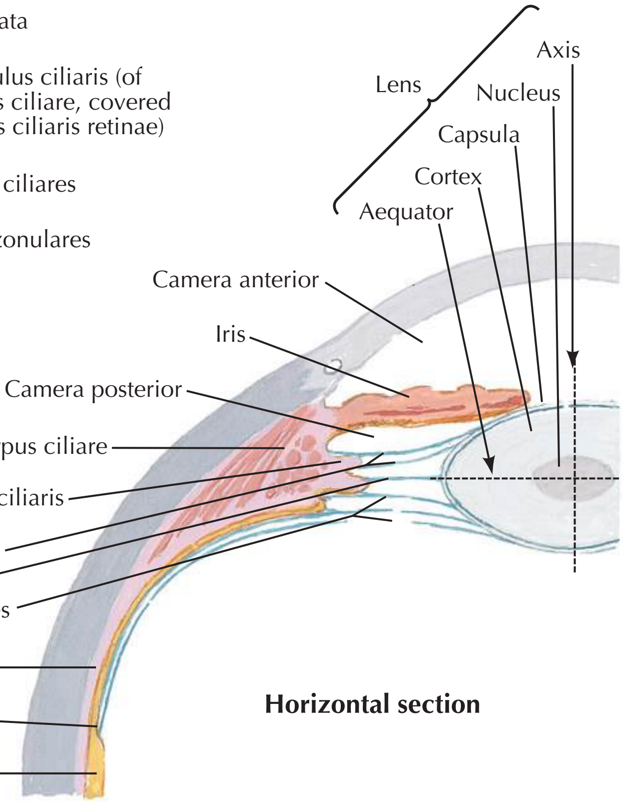

Linea translucens (of Schwalbe)
Lamina limitans posterior (Membrana Descemeti)
Reticulum trabeculare; Spatia anguli iridocornealis (Fontanae)
Epithelium posterius
Sinus venosus sclerae (Canalis Schlemmi)
Cornea
Calcar sclerae
Angulus iridocornealis
Lig. pectinatum
Circulus arteriosus major iridis
V. ciliaris anterior
Tunica conjunctiva bulbi
Camera anterior
Plicae iridis
Sclera
Circulus arteriosus minor iridis
Lens
Camera posterior
Proc. ciliaris
Pars ciliaris retinae
Fibrae meridionales
Fibrae circulares
M. ciliaris
Dilatator pupillae
Corpus ciliare
Fibrae zonulares (Lig. suspensorium lentis)
Epithelium pigmentosum iridicum (of Pars iridica retinae)
Nucleus lentis
Capsula lentis
Sphincter pupillae
Spatium perichorioideum

Note: For clarity, only single plane of fibrae zonulares shown; actually, fibers surround entire circumference of lens.

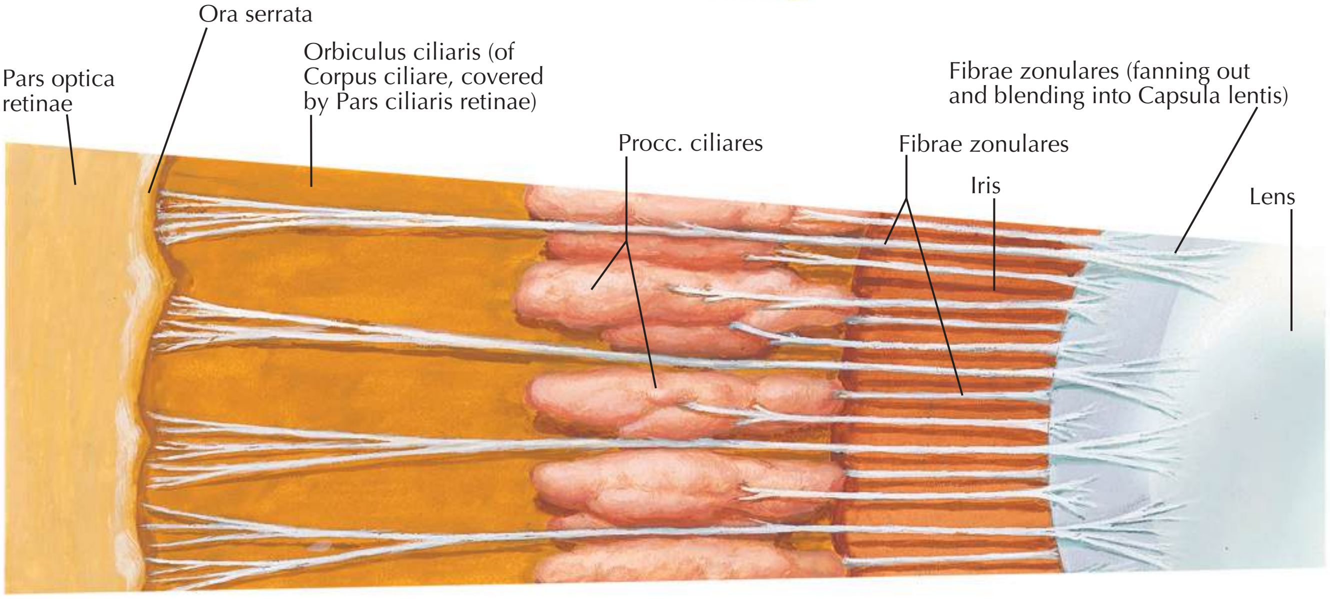
F. Netter M.D.


Sclera
Chorioidea
Pars optica retinae
Ora serrata
Orbiculus ciliaris (of Corpus ciliare, covered by Pars ciliaris retinae)
Procc. ciliares
Fibrae zonulares
Lens

Eyeball sectioned in coronal plane: anterior segment viewed from behind


Lens
Axis
Nucleus
Capsula
Cortex
Aequator
Camera anterior
Iris
Camera posterior
Corpus ciliare
Proc. ciliaris
Fibrae zonulares
preaequatoriales
aequatoriales
postaequatoriales
Orbiculus ciliaris corporis ciliaris
Ora serrata
Pars optica retinae

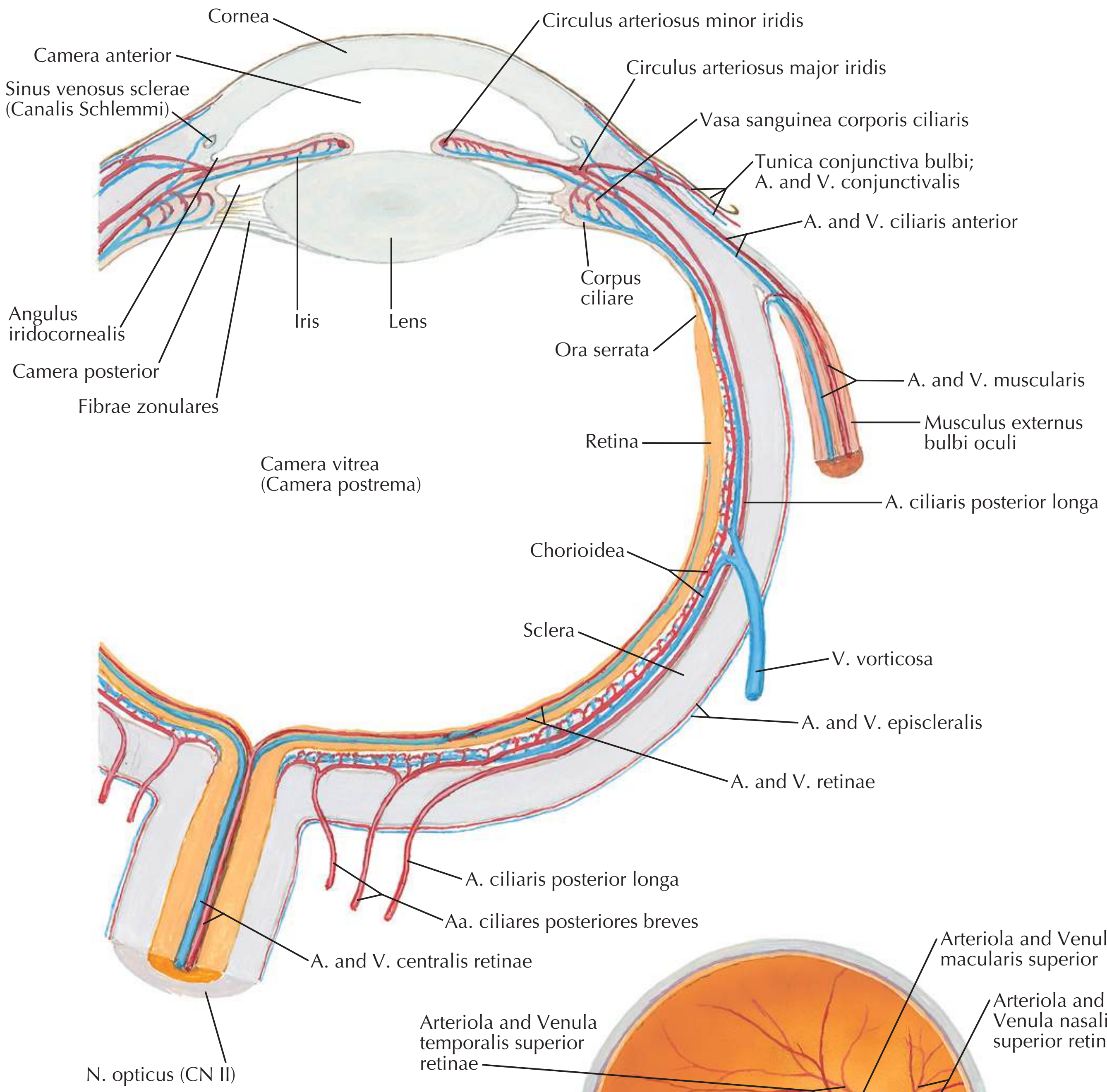
Horizontal section

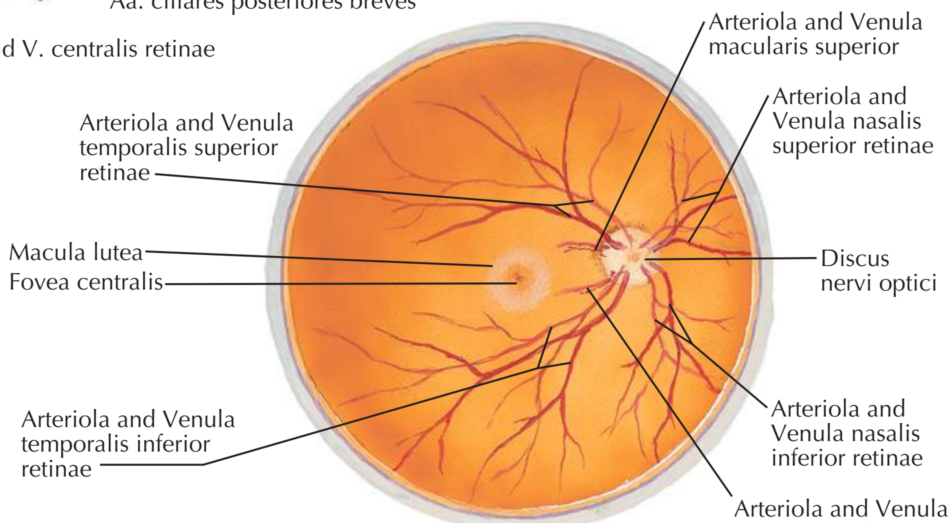

Pars optica retinae
Ora serrata
Orbiculus ciliaris (of Corpus ciliare, covered by Pars ciliaris retinae)
Procc. ciliares
Fibrae zonulares
Iris
Fibrae zonulares (fanning out and blending into Capsula lentis)
Lens

Enlargement of segment outlined in top illustration (semischematic)

Intrinsic Arteries and Veins of Eye

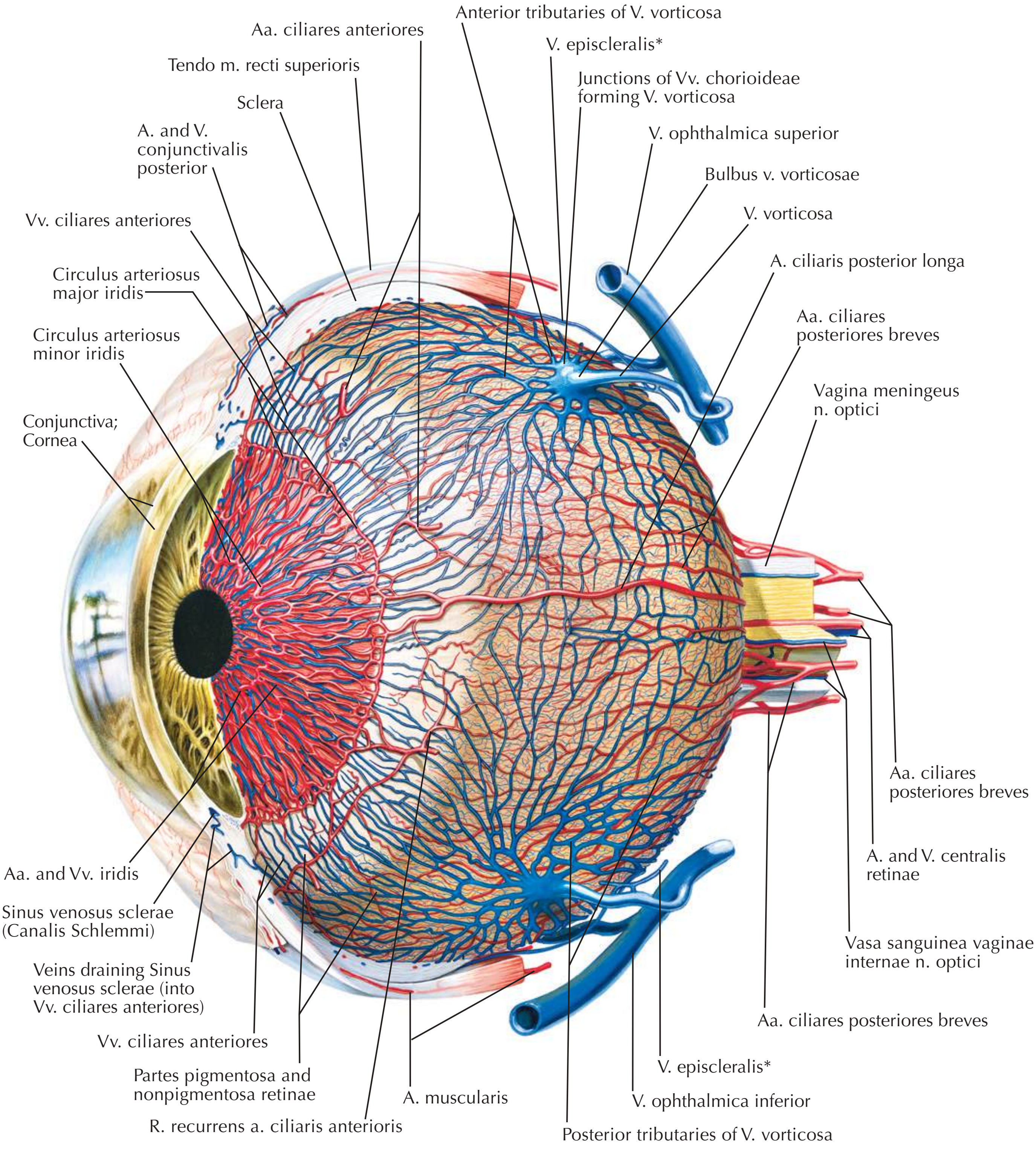
See also Plate 104


Cornea
Camera anterior
Sinus venosus sclerae (Canalis Schlemmi)
Angulus iridocornealis
Camera posterior
Fibrae zonulares
Iris
Lens
Circulus arteriosus minor iridis
Circulus arteriosus major iridis
Vasa sanguinea corporis ciliaris
Tunica conjunctiva bulbi; A. and V. conjunctivalis
A. and V. ciliaris anterior
Corpus ciliare
Ora serrata
A. and V. muscularis
Musculus externus bulbi oculi
Retina
Camera vitrea (Camera postrema)
A. ciliaris posterior longa
Chorioidea
Sclera
V. vorticosa
A. and V. episcleralis
A. and V. retinae
A. ciliaris posterior longa
Aa. ciliares posteriores breves
A. and V. centralis retinae
N. opticus (CN II)


Arteriola and Venula macularis superior
Arteriola and Venula nasalis superior retinae
Arteriola and Venula temporalis superior retinae
Discus nervi optici
Macula lutea
Fovea centralis
Arteriola and Venula nasalis inferior retinae
Arteriola and Venula temporalis inferior retinae
Arteriola and Venula macularis inferior

Right retinal vessels: funduscopic view

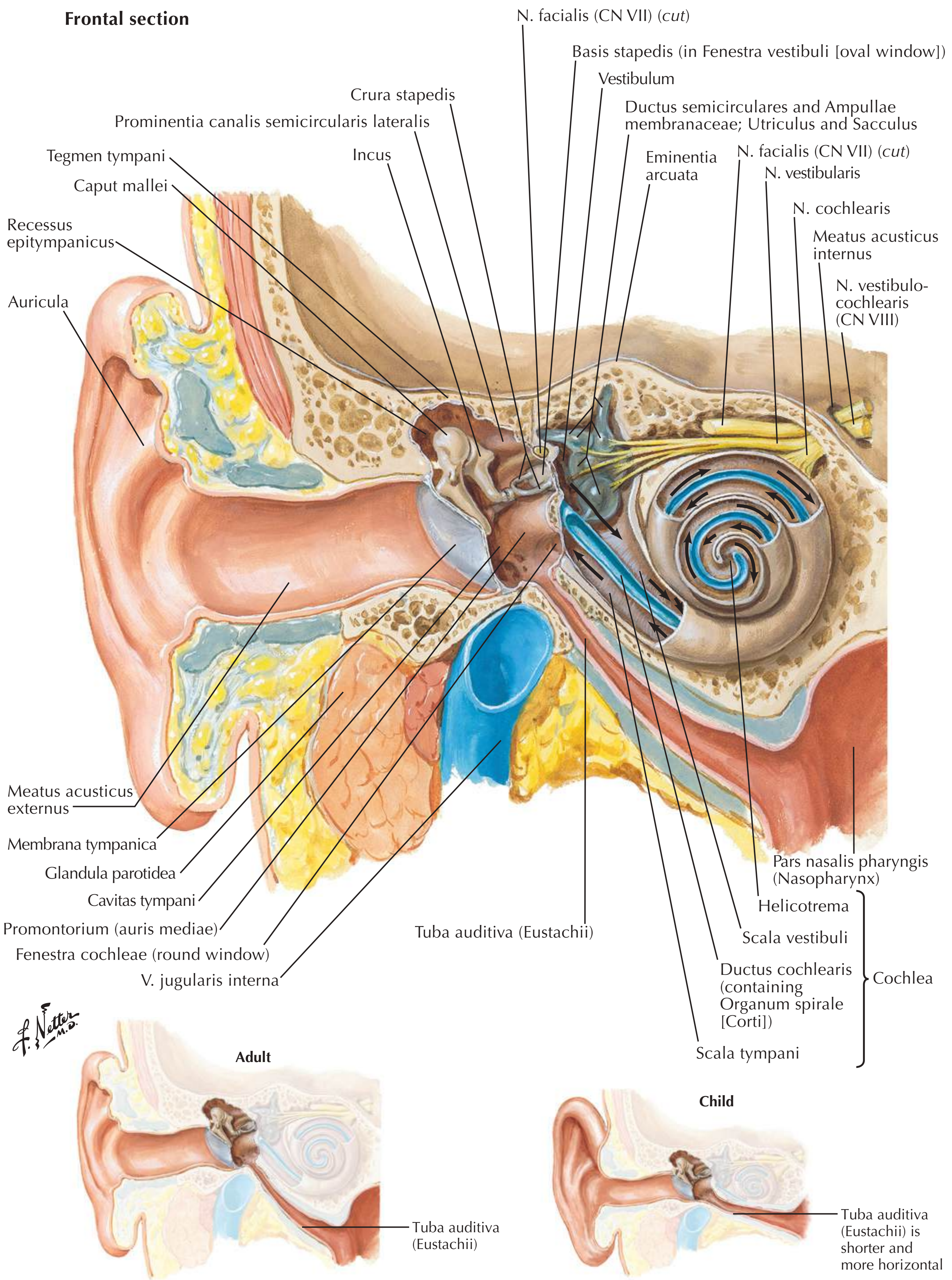
Vascular arrangements within the choroid (tunica vasculosa bulbi) of the eyeball


Anterior tributaries of V. vorticosa
Aa. ciliares anteriores
V. episcleralis*
Tendo m. recti superioris
Junctions of Vv. chorioideae forming V. vorticosa
Sclera
A. and V. conjunctivalis posterior
V. ophthalmica superior
Bulbus v. vorticosae
Vv. ciliares anteriores
V. vorticosa
A. ciliaris posterior longa
Circulus arteriosus major iridis
Aa. ciliares posteriores breves
Circulus arteriosus minor iridis
Vagina meningeus n. optici
Conjunctiva; Cornea
Aa. ciliares posteriores breves
A. and V. centralis retinae
Aa. and Vv. iridis
Sinus venosus sclerae (Canalis Schlemmi)
Vasa sanguinea vaginae internae n. optici
Veins draining Sinus venosus sclerae (into Vv. ciliares anteriores)
Aa. ciliares posteriores breves
Vv. ciliares anteriores
V. episcleralis*
Partes pigmentosa and nonpigmentosa retinae
A. muscularis
V. ophthalmica inferior
R. recurrens a. ciliaris anterioris
Posterior tributaries of V. vorticosa

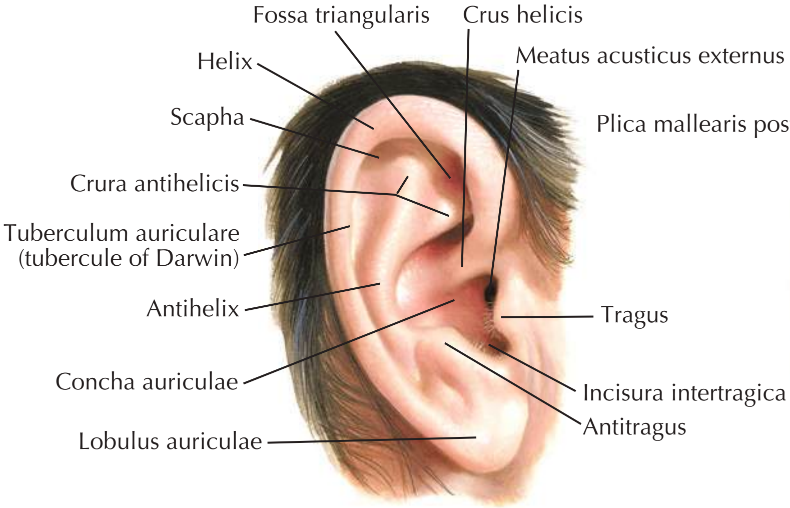
**Vv. episclerales are shown here anastomosing with the Vv. vorticosae, which they do; however, they also drain into the Vv. ciliares anteriores.*

C. Machado M.D.

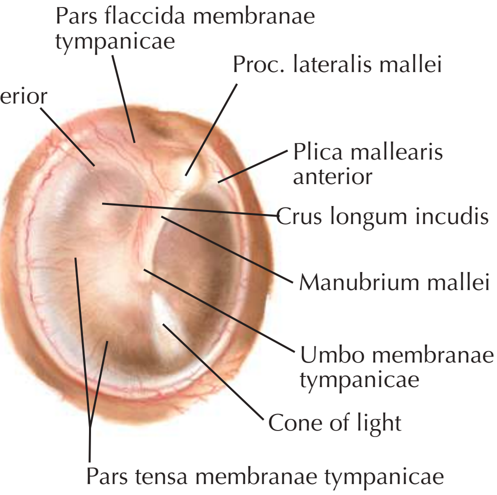
Ear and Course of Sound in Cochlea


Frontal section
N. facialis (CN VII) (*cut*)
Basis stapedis (in Fenestra vestibuli [oval window])
Vestibulum
Crura stapedis
Prominentia canalis semicircularis lateralis
Ductus semicirculares and Ampullae membranaceae; Utriculus and Sacculus
Tegmen tympani
Incus
Eminentia arcuata
N. facialis (CN VII) (*cut*)
N. vestibularis
Caput mallei
N. cochlearis
Recessus epitympanicus
Meatus acusticus internus
N. vestibulo-cochlearis (CN VIII)
Auricula
Meatus acusticus externus
Membrana tympanica
Glandula parotidea
Cavitas tympani
Promontorium (auris mediae)
Fenestra cochleae (round window)
V. jugularis interna
Tuba auditiva (Eustachii)
Pars nasalis pharyngis (Nasopharynx)
Helicotrema
Scala vestibuli
Ductus cochlearis (containing Organum spirale [Corti])
Cochlea
Scala tympani
Adult
Tuba auditiva (Eustachii)
Child
Tuba auditiva (Eustachii) is shorter and more horizontal

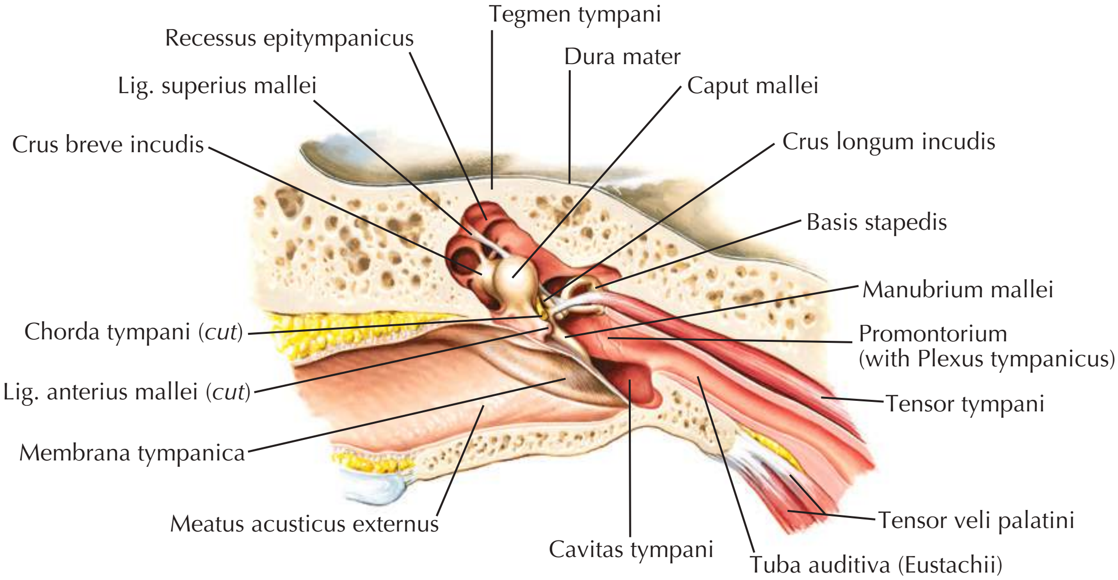
Right auricle (pinna)


Fossa triangularis
Crus helicis
Helix
Meatus acusticus externus
Scapha
Crura antihelicis
Tuberculum auriculare (tubercule of Darwin)
Antihelix
Tragus
Concha auriculae
Incisura intertragica
Antitragus
Lobulus auriculae

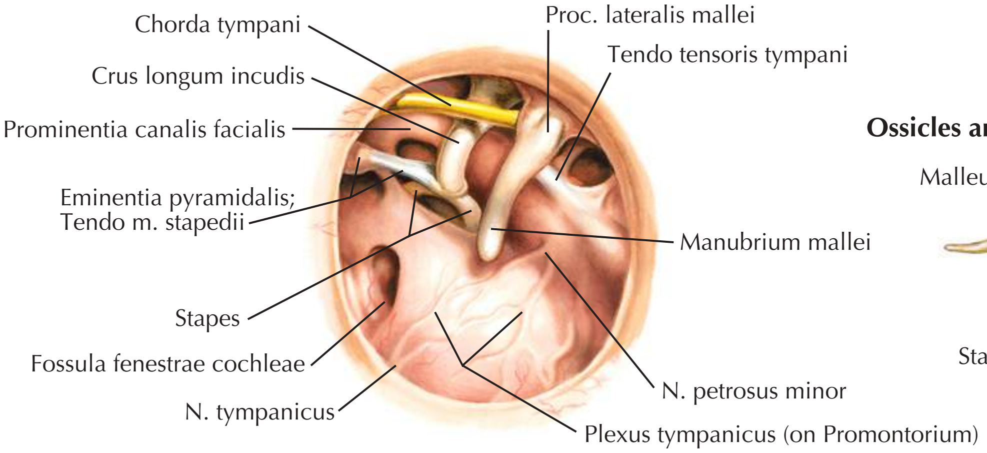
Otoscopic view of right tympanic membrane


Plica mallearis posterior
Pars flaccida membranae tympanicae
Proc. lateralis mallei
Plica mallearis anterior
Crus longum incudis
Manubrium mallei
Umbo membranae tympanicae
Cone of light
Pars tensa membranae tympanicae

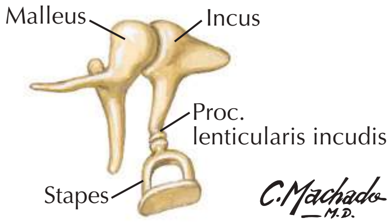
Coronal oblique section of meatus acusticus externus and auris media (cavitas tympani)


Tegmen tympani
Recessus epitympanicus
Dura mater
Lig. superius mallei
Caput mallei
Crus breve incudis
Crus longum incudis
Basis stapedis
Manubrium mallei
Chorda tympani (cut)
Promontorium (with Plexus tympanicus)
Lig. anterius mallei (cut)
Tensor tympani
Membrana tympanica
Meatus acusticus externus
Cavitas tympani
Tensor veli palatini
Tuba auditiva (Eustachii)

Cavitas tympani dex. after removal of membrana tympanica (lateral view)


Chorda tympani
Proc. lateralis mallei
Tendo tensoris tympani
Crus longum incudis
Prominentia canalis facialis
Eminentia pyramidalis; Tendo m. stapedii
Manubrium mallei
Stapes
Fossula fenestrae cochleae
N. petrosus minor
N. tympanicus
Plexus tympanicus (on Promontorium)

Ossicles articulated: medial view

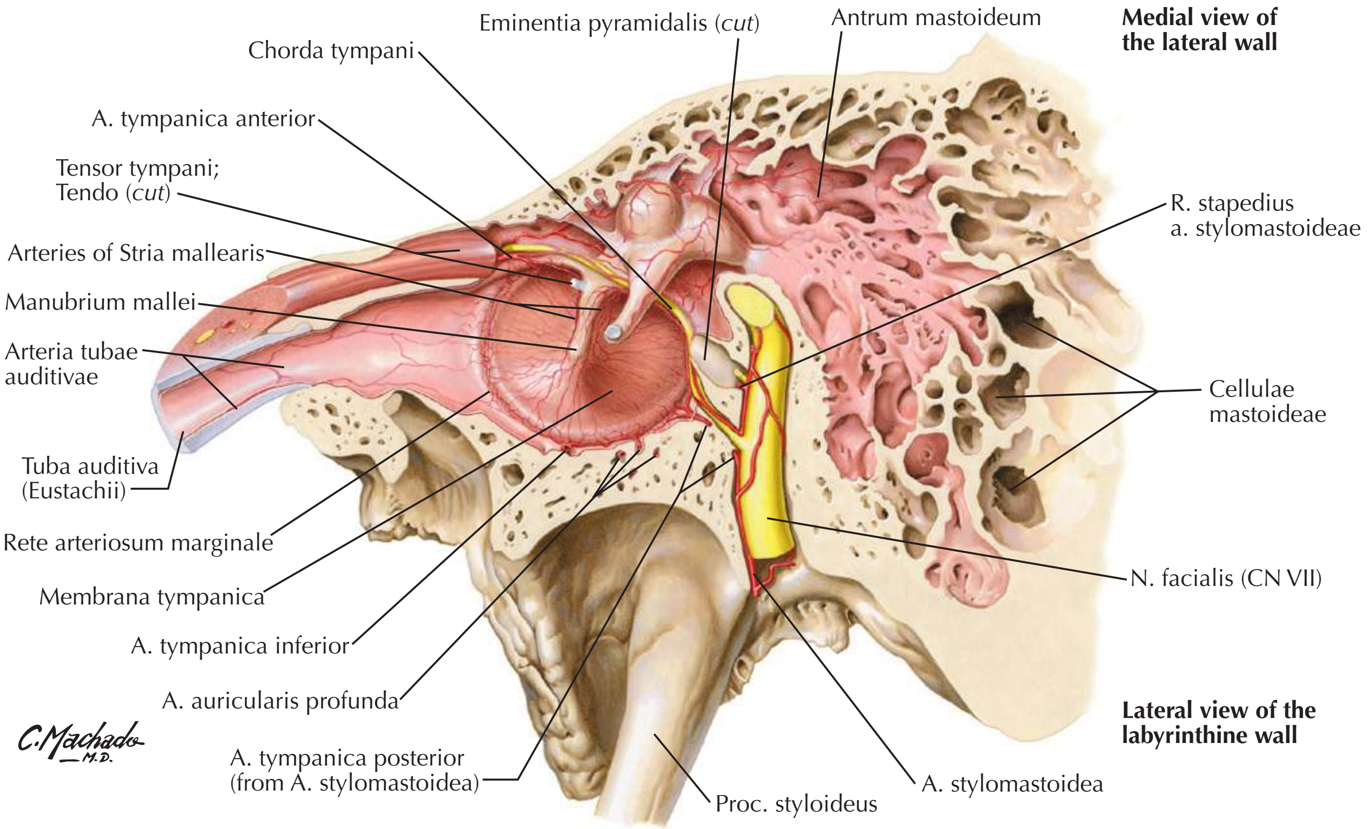

Malleus
Incus
Proc. lenticularis incudis
Stapes

C.Machado M.D.

F. Netter M.D.

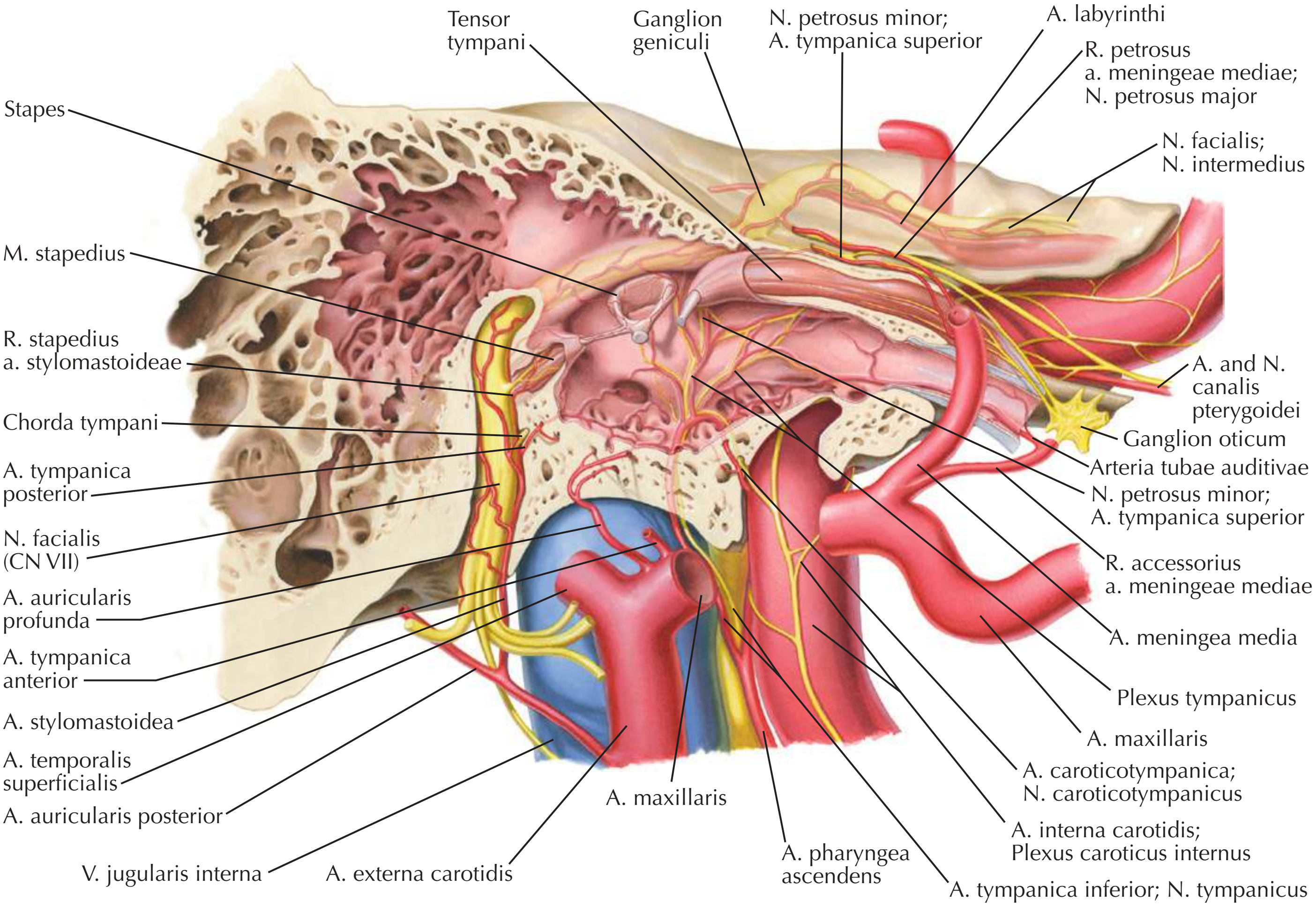
Tympanic Cavity

See also Plates 59, 146



Medial view of the lateral wall

Chorda tympani
Eminentia pyramidalis (*cut*)
Antrum mastoideum
A. tympanica anterior
Tensor tympani;
Tendo (*cut*)
Arteries of Stria mallearis
Manubrium mallei
Arteria tubae auditivae
Tuba auditiva (Eustachii)
Rete arteriosum marginale
Membrana tympanica
A. tympanica inferior
A. auricularis profunda
A. tympanica posterior (from A. stylomastoidea)
R. stapedius a. stylomastoideae
Cellulae mastoideae
N. facialis (CN VII)
Proc. styloideus
A. stylomastoidea
C. Machado M.D.

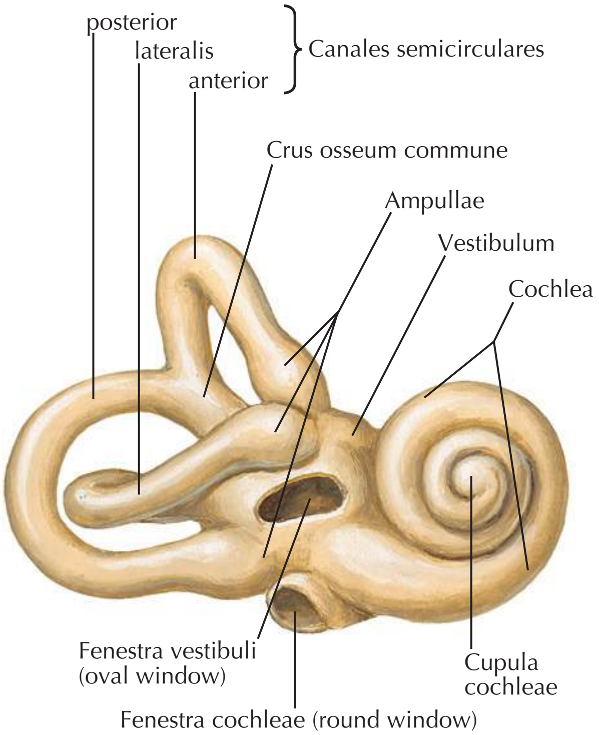


Lateral view of the labyrinthine wall

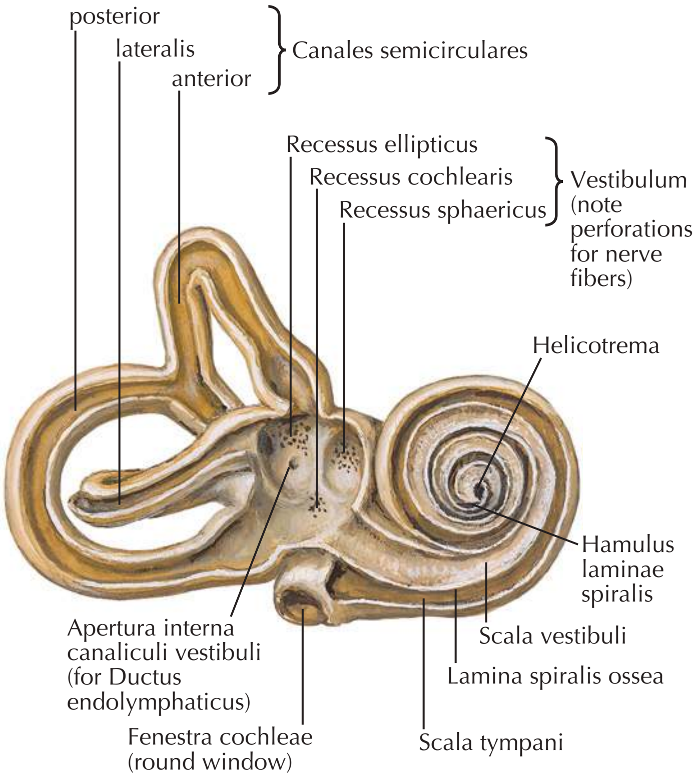
Tensor tympani
Ganglion geniculi
N. petrosus minor;
A. tympanica superior
A. labyrinthi
R. petrosus a. meningeae mediae;
N. petrosus major
N. facialis;
N. intermedius
Stapes
M. stapedius
R. stapedius a. stylomastoideae
Chorda tympani
A. tympanica posterior
N. facialis (CN VII)
A. auricularis profunda
A. tympanica anterior
A. stylomastoidea
A. temporalis superficialis
A. auricularis posterior
V. jugularis interna
A. externa carotidis
A. maxillaris
A. pharyngea ascendens
A. and N. canalis pterygoidei
Ganglion oticum
Arteria tubae auditivae
N. petrosus minor;
A. tympanica superior
R. accessorius a. meningeae mediae
A. meningea media
Plexus tympanicus
A. maxillaris
A. caroticotympanica;
N. caroticotympanicus
A. interna carotidis;
Plexus caroticus internus
A. tympanica inferior; N. tympanicus

See also Plate 135

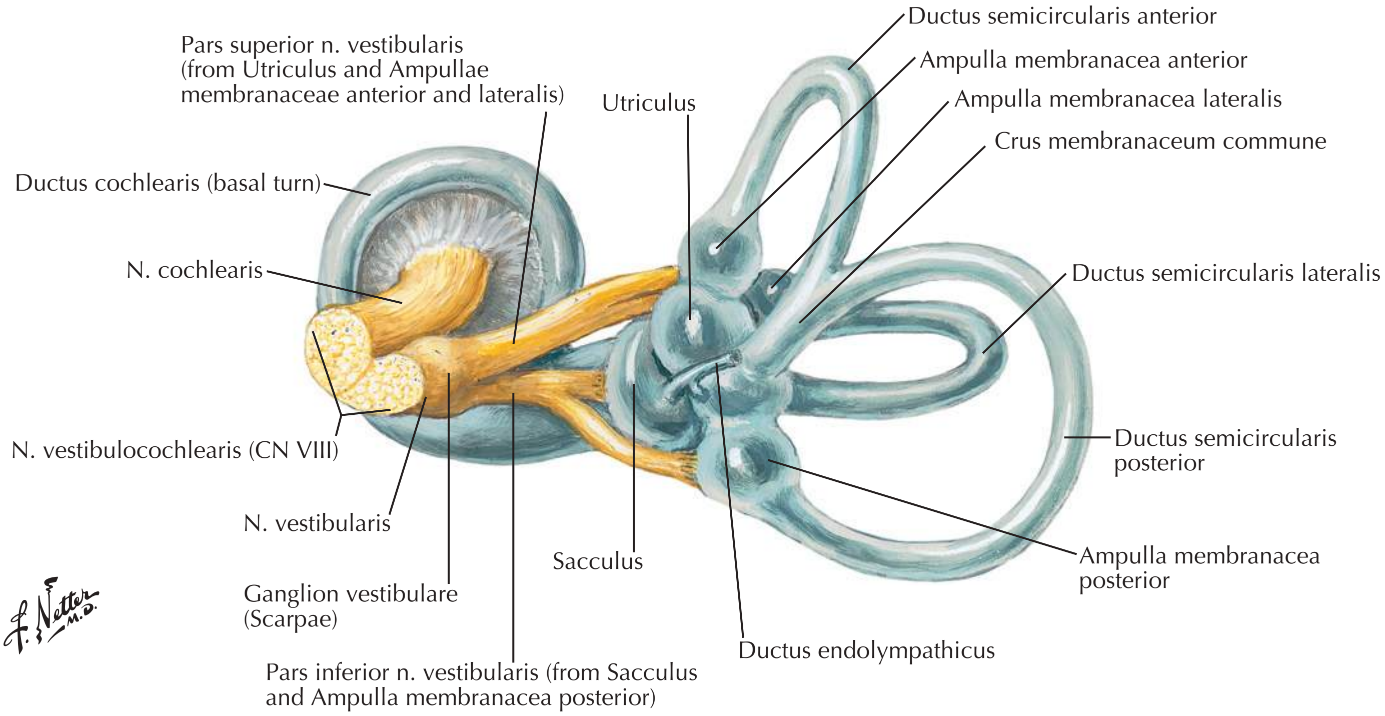
Right bony labyrinth (otic capsule), anterolateral view: surrounding cancellous bone removed


posterior
lateralis
anterior
Canales semicirculares
Crus osseum commune
Ampullae
Vestibulum
Cochlea
Fenestra vestibuli (oval window)
Cupula cochleae
Fenestra cochleae (round window)

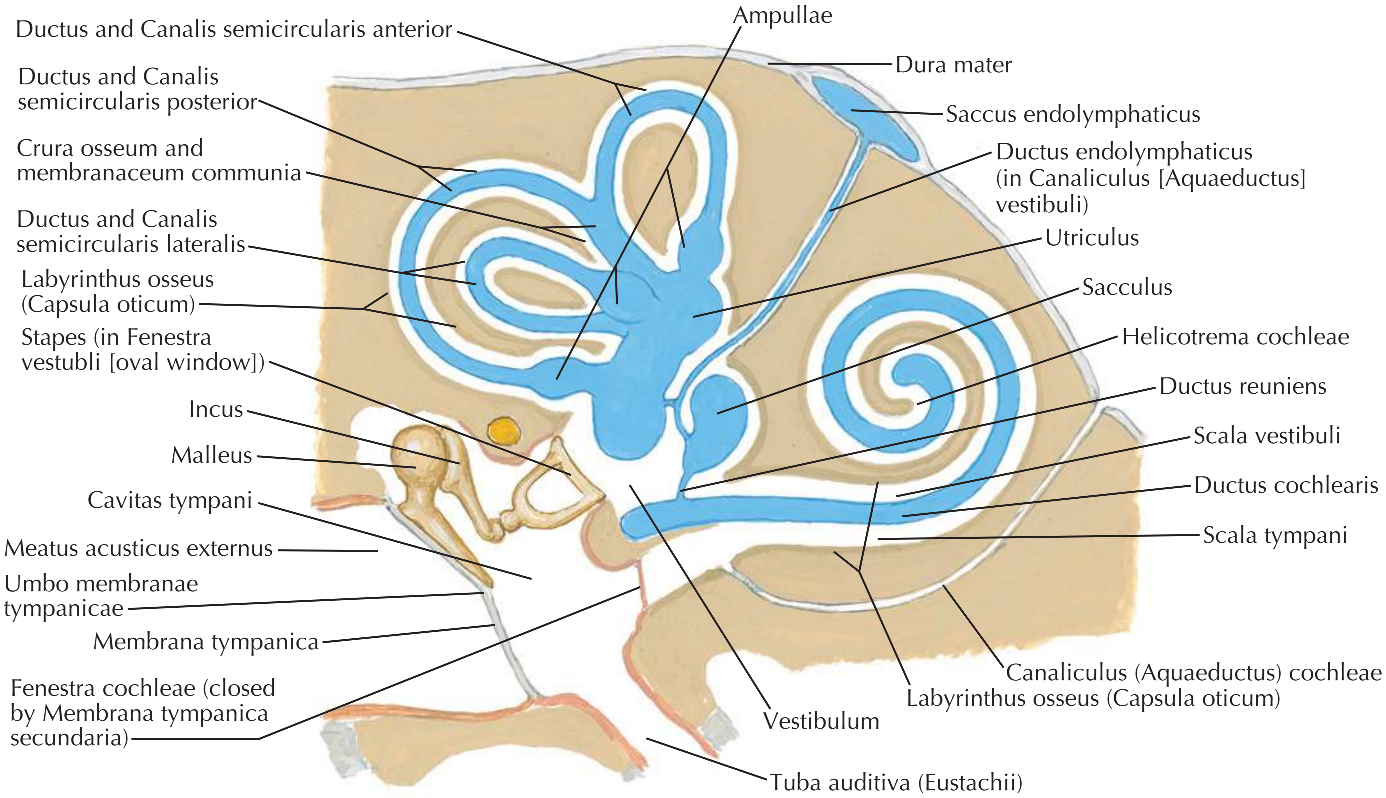
Dissected right bony labyrinth (otic capsule): membranous labyrinth removed


posterior
lateralis
anterior
Canales semicirculares
Recessus ellipticus
Recessus cochlearis
Recessus sphaericus
Vestibulum (note perforations for nerve fibers)
Helicotrema
Hamulus laminae spiralis
Scala vestibuli
Lamina spiralis ossea
Apertura interna canaliculi vestibuli (for Ductus endolymphaticus)
Fenestra cochleae (round window)
Scala tympani

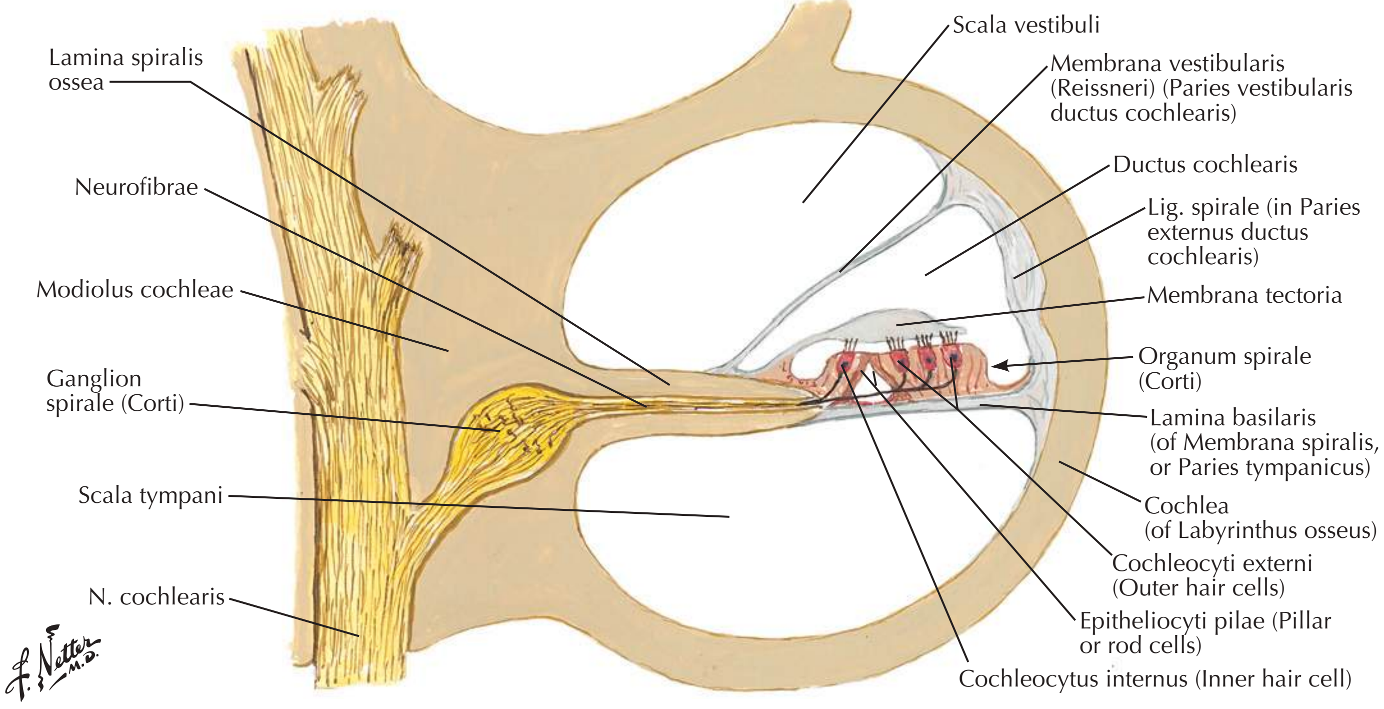
Right membranous labyrinth with nerves: medial view


Pars superior n. vestibularis (from Utriculus and Ampullae membranaceae anterior and lateralis)
Utriculus
Ductus semicircularis anterior
Ampulla membranacea anterior
Ampulla membranacea lateralis
Crus membranaceum commune
Ductus cochlearis (basal turn)
N. cochlearis
Ductus semicircularis lateralis
N. vestibulocochlearis (CN VIII)
Ductus semicircularis posterior
N. vestibularis
Sacculus
Ampulla membranacea posterior
F. Netter M.D.
Ganglion vestibulare (Scarpae)
Ductus endolympathicus
Pars inferior n. vestibularis (from Sacculus and Ampulla membranacea posterior)

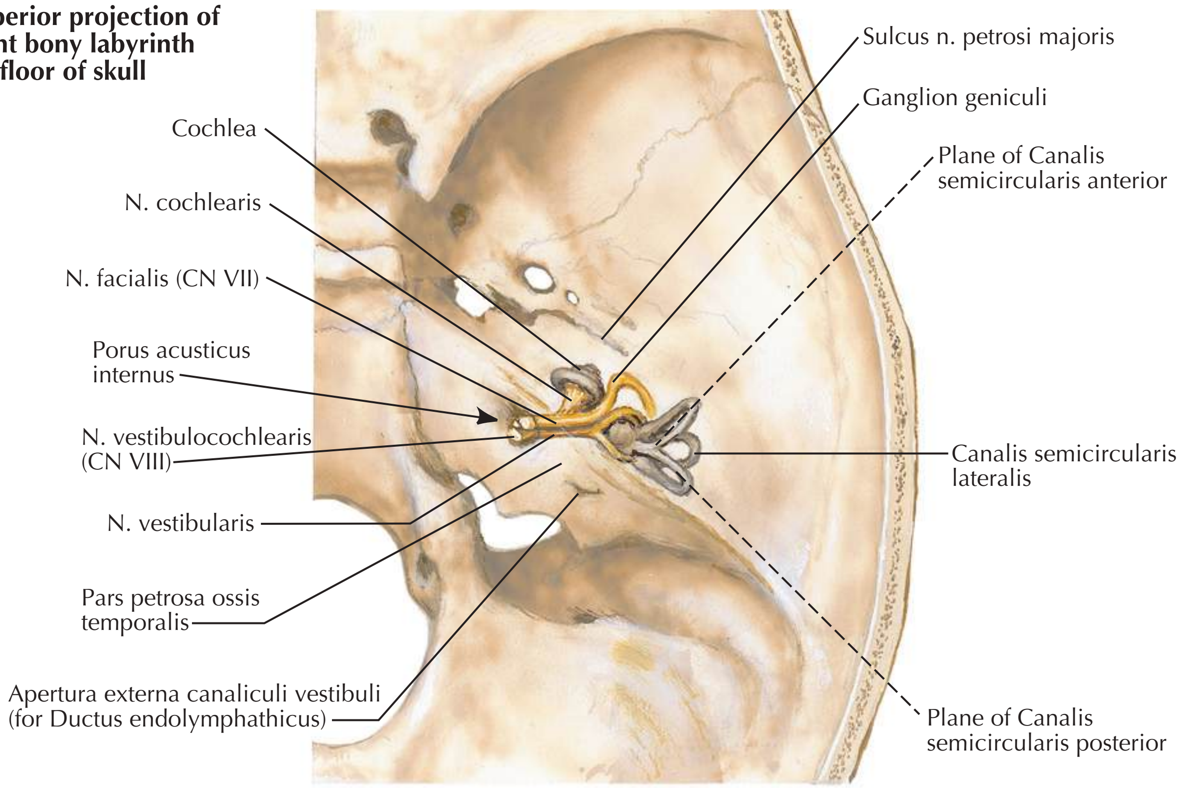
Bony and membranous labyrinths: schema


Ductus and Canalis semicircularis anterior
Ductus and Canalis semicircularis posterior
Crura osseum and membranaceum communia
Ductus and Canalis semicircularis lateralis
Labyrinthus osseus (Capsula oticum)
Stapes (in Fenestra vestubli [oval window])
Incus
Malleus
Cavitas tympani
Meatus acusticus externus
Umbo membranae tympanicae
Membrana tympanica
Fenestra cochleae (closed by Membrana tympanica secundaria)
Ampullae
Dura mater
Saccus endolymphaticus
Ductus endolymphaticus (in Canaliculus [Aquaeductus] vestibuli)
Utriculus
Sacculus
Helicotrema cochleae
Ductus reuniens
Scala vestibuli
Ductus cochlearis
Scala tympani
Canaliculus (Aquaeductus) cochleae
Labyrinthus osseus (Capsula oticum)
Vestibulum
Tuba auditiva (Eustachii)

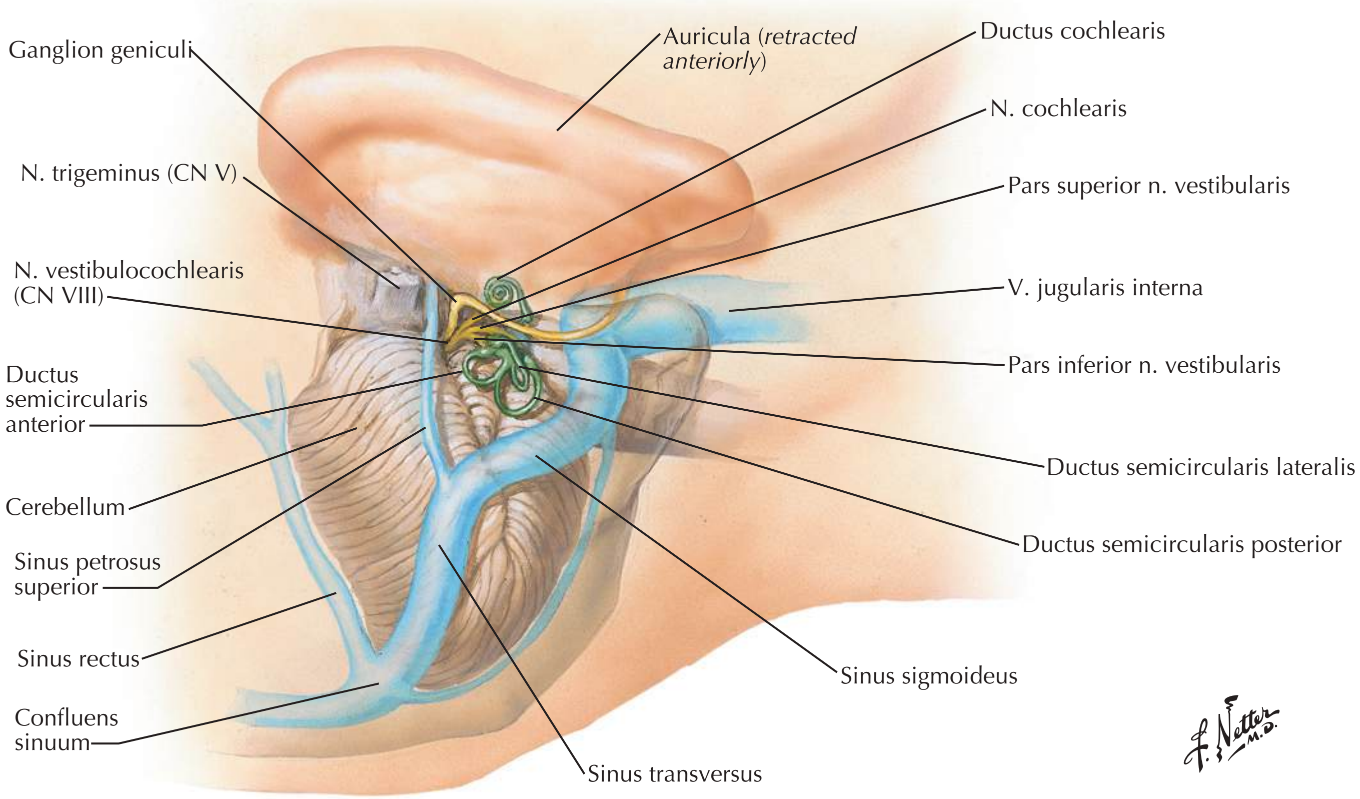
Section through turn of cochlea


Lamina spiralis ossea
Neurofibrae
Modiolus cochleae
Ganglion spirale (Corti)
Scala tympani
N. cochlearis
Scala vestibuli
Membrana vestibularis (Reissneri) (Paries vestibularis ductus cochlearis)
Ductus cochlearis
Lig. spirale (in Paries externus ductus cochlearis)
Membrana tectoria
Organum spirale (Corti)
Lamina basilaris (of Membrana spiralis, or Paries tympanicus)
Cochlea (of Labyrinthus osseus)
Cochleocyti externi (Outer hair cells)
Epitheliocyti pilae (Pillar or rod cells)
Cochleocytus internus (Inner hair cell)

Superior projection of right bony labyrinth on floor of skull

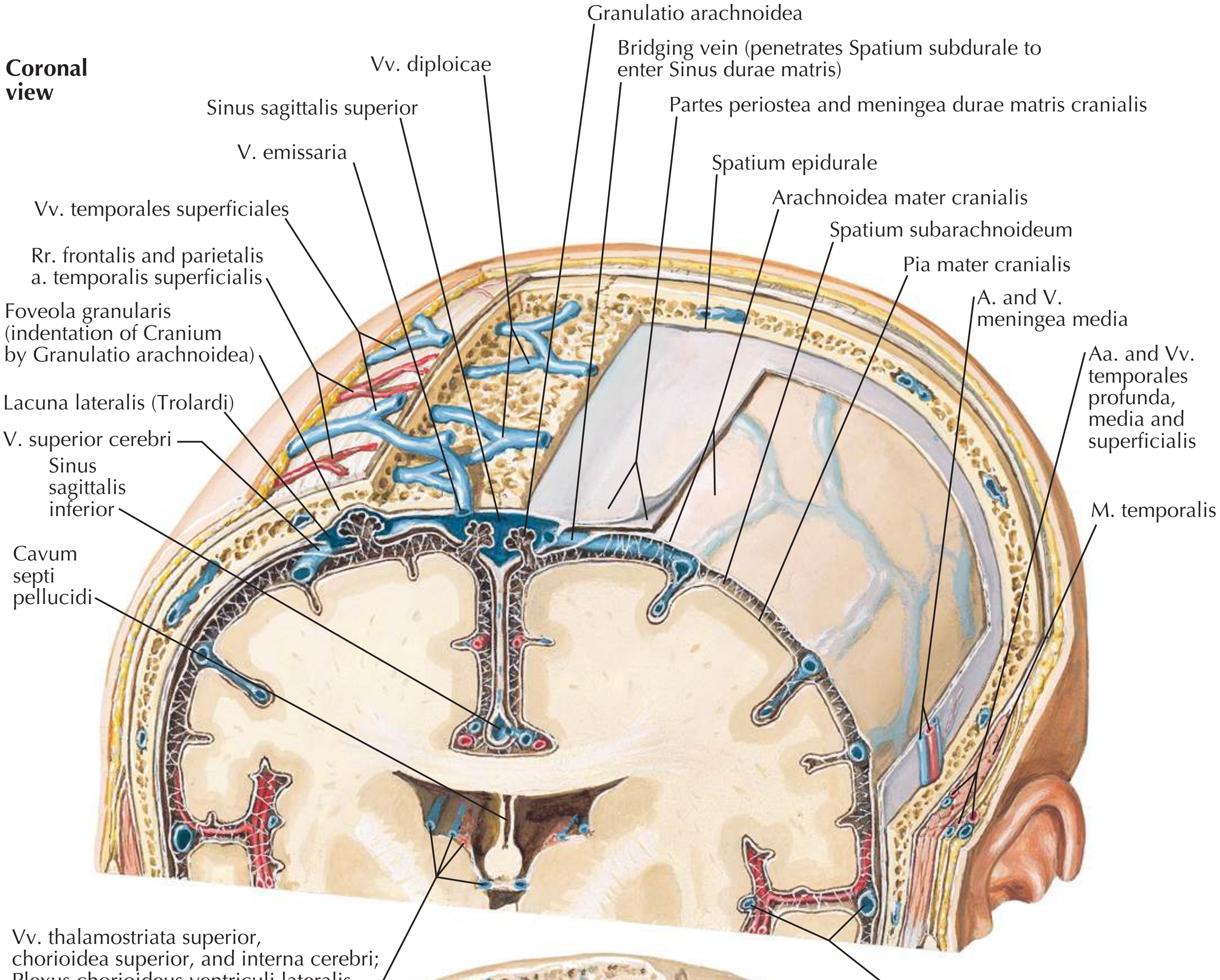

Cochlea
N. cochlearis
N. facialis (CN VII)
Porus acusticus internus
N. vestibulocochlearis (CN VIII)
N. vestibularis
Pars petrosa ossis temporalis
Apertura externa canaliculi vestibuli (for Ductus endolymphathicus)
Sulcus n. petrosi majoris
Ganglion geniculi
Plane of Canalis semicircularis anterior
Canalis semicircularis lateralis
Plane of Canalis semicircularis posterior

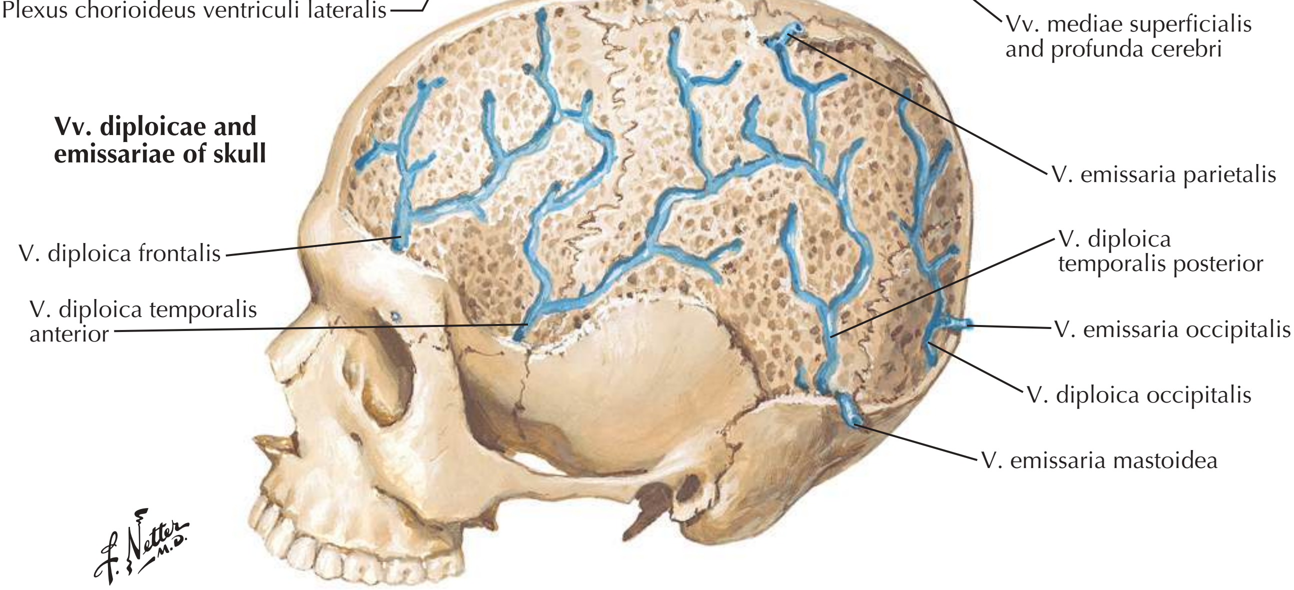
Lateral projection of right membranous labyrinth


Ganglion geniculi
N. trigeminus (CN V)
N. vestibulocochlearis (CN VIII)
Ductus semicircularis anterior
Cerebellum
Sinus petrosus superior
Sinus rectus
Confluens sinuum
Auricula (*retracted anteriorly*)
Ductus cochlearis
N. cochlearis
Pars superior n. vestibularis
V. jugularis interna
Pars inferior n. vestibularis
Ductus semicircularis lateralis
Ductus semicircularis posterior
Sinus sigmoideus
Sinus transversus
F. Netter M.D.

Meninges and Diploic Veins

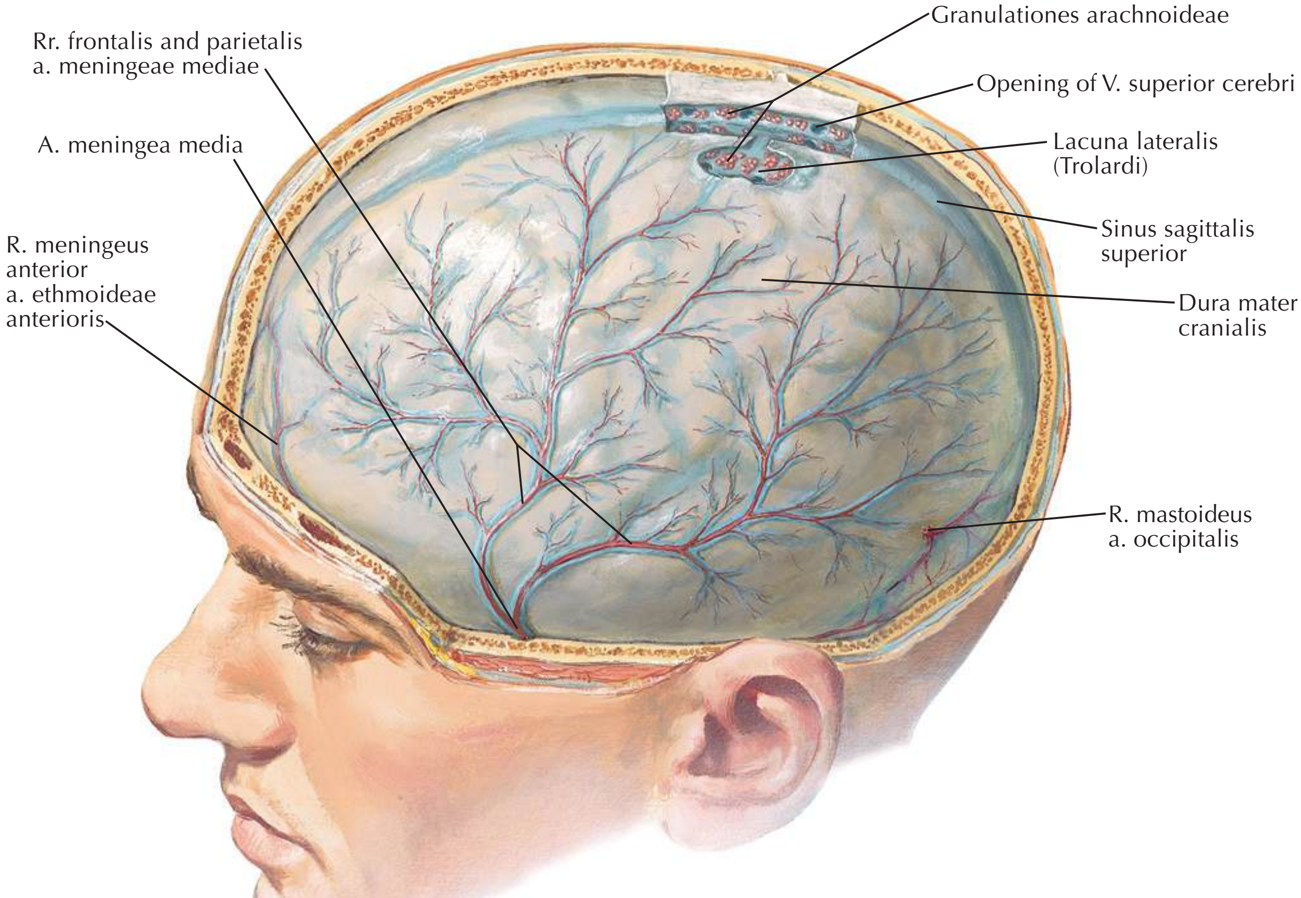
See also Plate 10

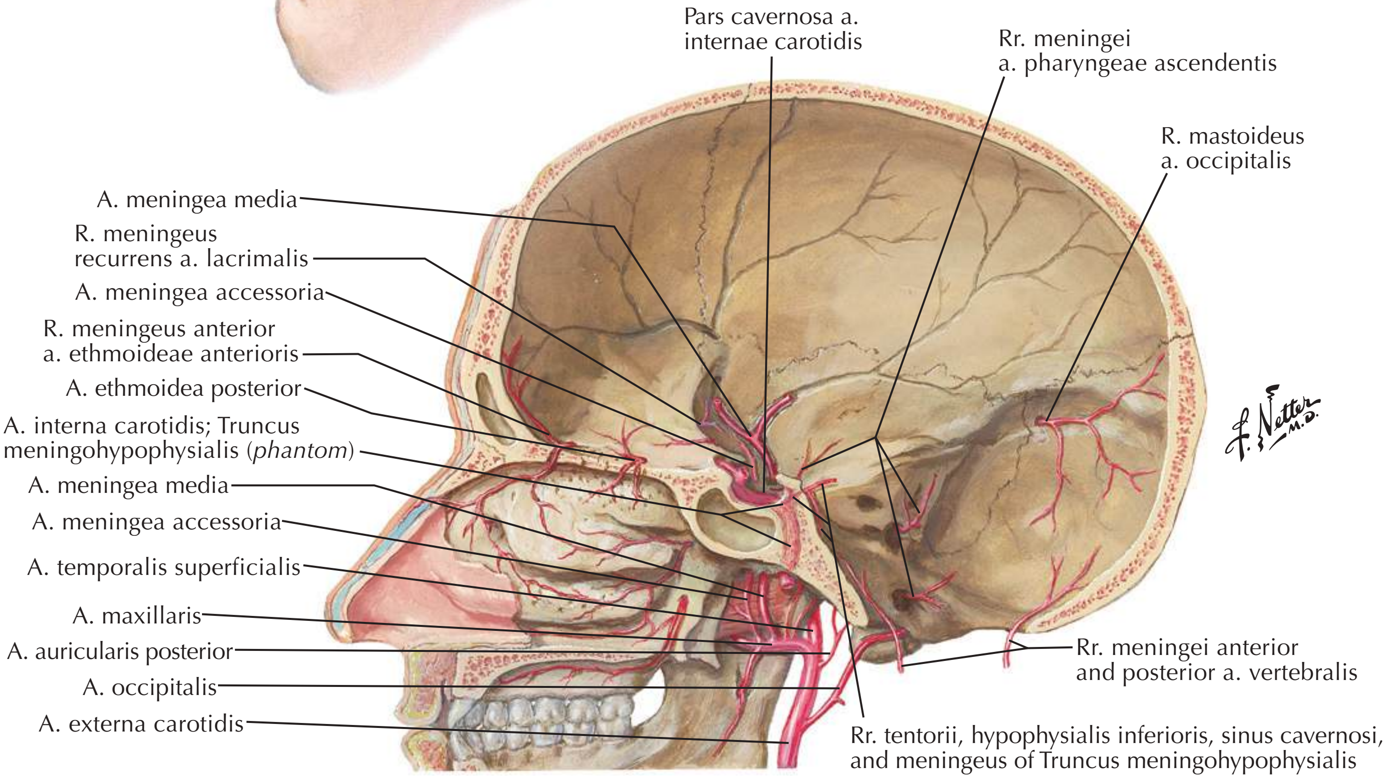

Coronal view
Granulatio arachnoidea
Bridging vein (penetrates Spatium subdurale to enter Sinus durae matris)
Vv. diploicae
Sinus sagittalis superior
Partes periostea and meningea durae matris cranialis
V. emissaria
Spatium epidurale
Arachnoidea mater cranialis
Vv. temporales superficiales
Spatium subarachnoideum
Rr. frontalis and parietalis a. temporalis superficialis
Pia mater cranialis
Foveola granularis (indentation of Cranium by Granulatio arachnoidea)
A. and V. meningea media
Aa. and Vv. temporales profunda, media and superficialis
Lacuna lateralis (Trolardi)
V. superior cerebri
Sinus sagittalis inferior
M. temporalis
Cavum septi pellucidi
Vv. thalamostriata superior, chorioidea superior, and interna cerebri; Plexus chorioideus ventriculi lateralis
Vv. mediae superficialis and profunda cerebri


Vv. diploicae and emissariae of skull
V. emissaria parietalis
V. diploica frontalis
V. diploica temporalis posterior
V. diploica temporalis anterior
V. emissaria occipitalis
V. diploica occipitalis
V. emissaria mastoidea

Meningeal Arteries

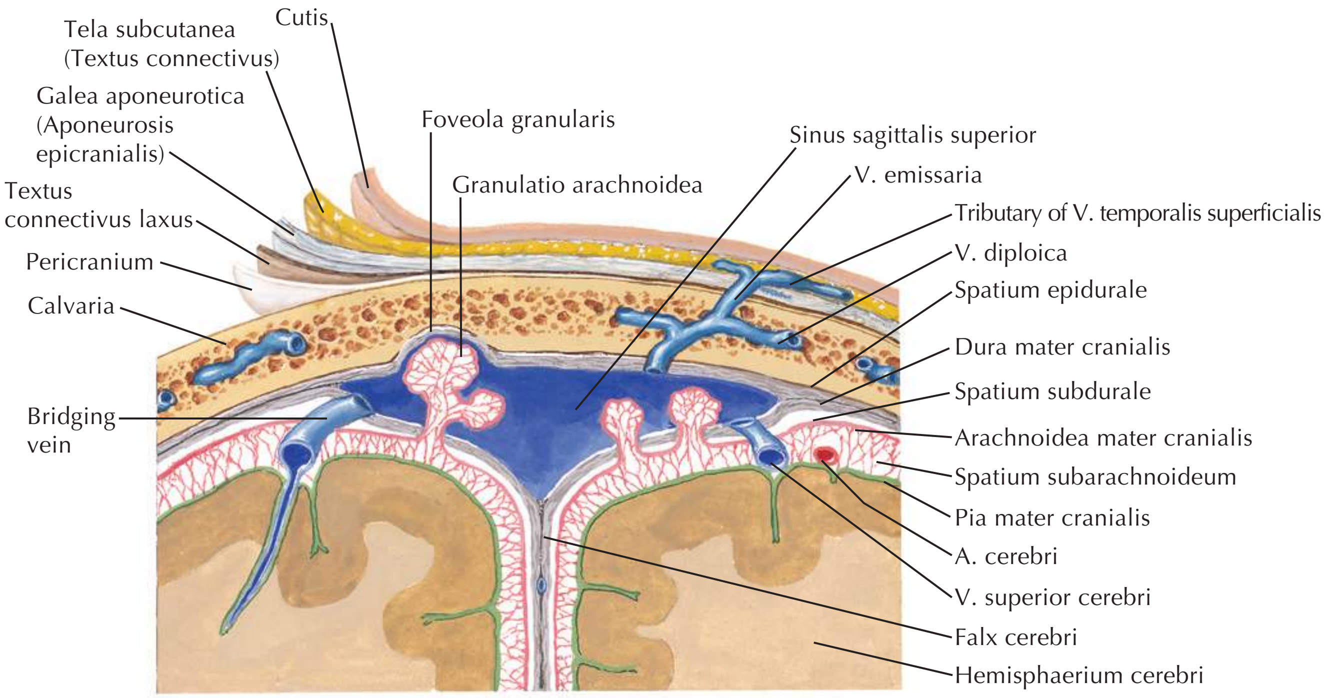
See also Plate 147

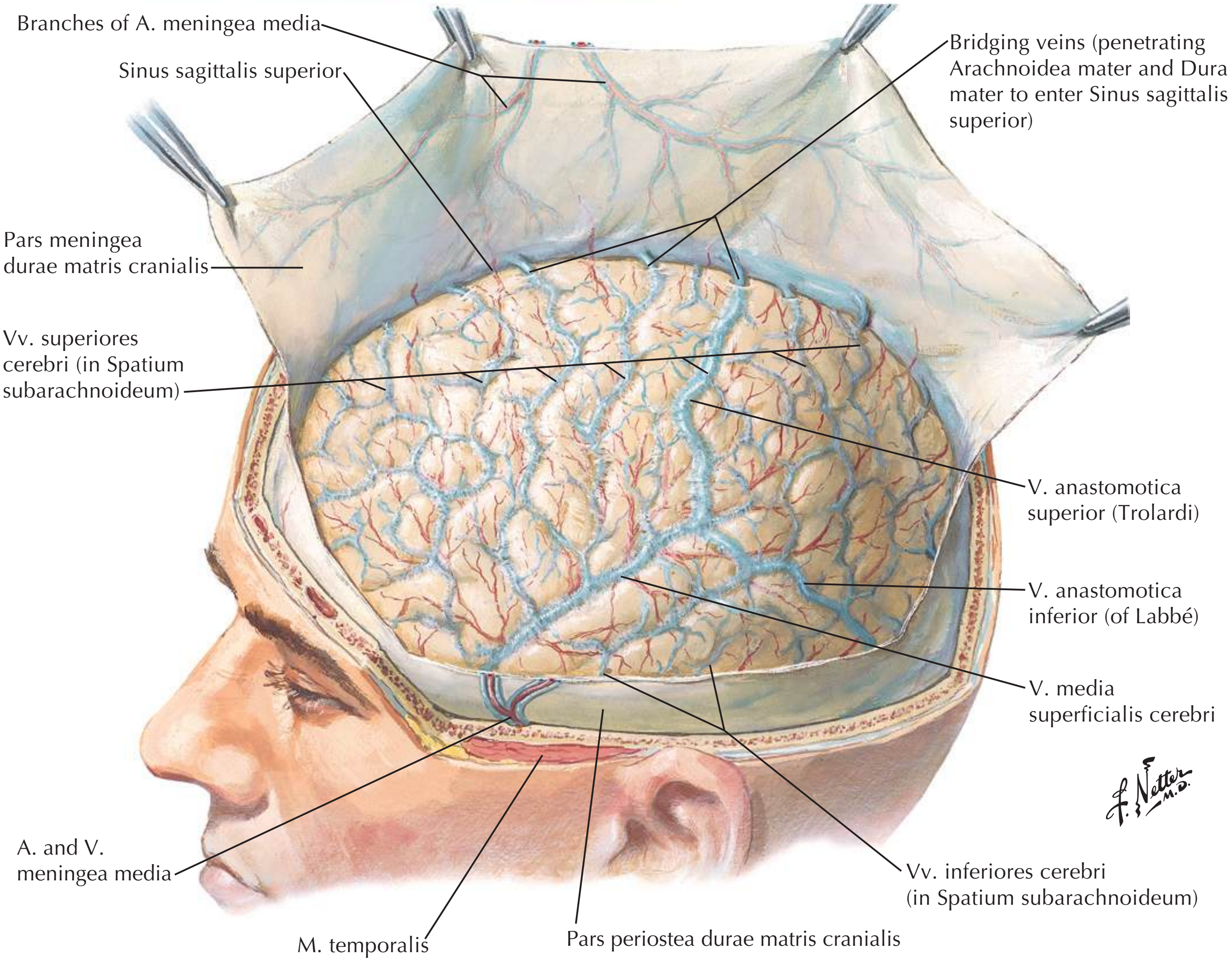

Rr. frontalis and parietalis a. meningeae mediae
A. meningea media
R. meningeus anterior a. ethmoideae anterioris
Granulationes arachnoideae
Opening of V. superior cerebri
Lacuna lateralis (Trolardi)
Sinus sagittalis superior
Dura mater cranialis
R. mastoideus a. occipitalis


Pars cavernosa a. internae carotidis
Rr. meningei a. pharyngeae ascendentis
R. mastoideus a. occipitalis
A. meningea media
R. meningeus recurrens a. lacrimalis
A. meningea accessoria
R. meningeus anterior a. ethmoideae anterioris
A. ethmoidea posterior
A. interna carotidis; Truncus meningohypophysialis (*phantom*)
A. meningea media
A. meningea accessoria
A. temporalis superficialis
A. maxillaris
A. auricularis posterior
A. occipitalis
A. externa carotidis
Rr. meningei anterior and posterior a. vertebralis
Rr. tentorii, hypophysialis inferioris, sinus cavernosi, and meningeus of Truncus meningohypophysialis
F. Netter M.D.

Meninges and Superficial Cerebral Veins

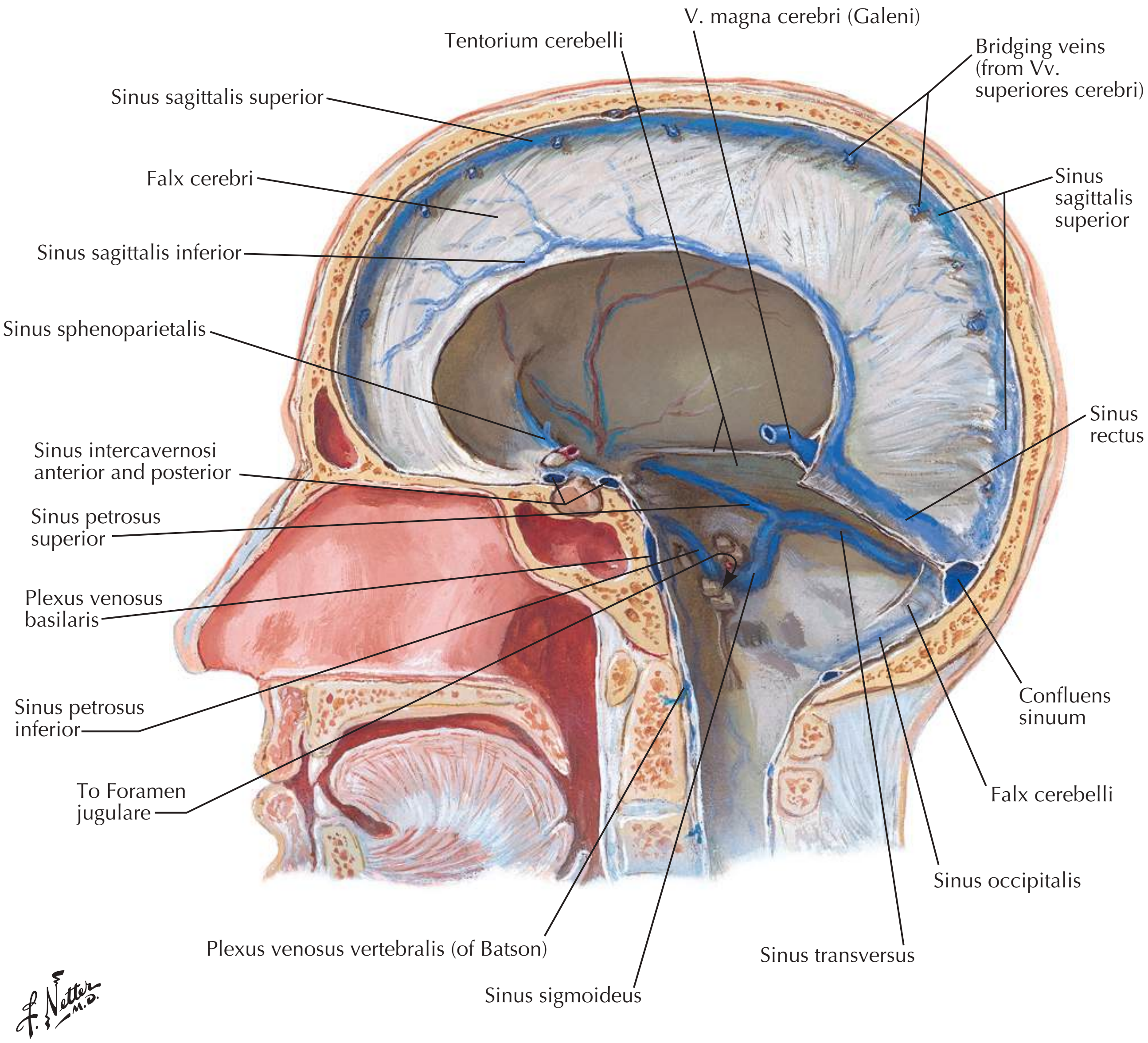
For deep veins of brain see Plate 156


Cutis
Tela subcutanea (Textus connectivus)
Galea aponeurotica (Aponeurosis epicranialis)
Textus connectivus laxus
Pericranium
Calvaria
Bridging vein
Foveola granularis
Granulatio arachnoidea
Sinus sagittalis superior
V. emissaria
Tributary of V. temporalis superficialis
V. diploica
Spatium epidurale
Dura mater cranialis
Spatium subdurale
Arachnoidea mater cranialis
Spatium subarachnoideum
Pia mater cranialis
A. cerebri
V. superior cerebri
Falx cerebri
Hemisphaerium cerebri


Branches of A. meningea media
Sinus sagittalis superior
Bridging veins (penetrating Arachnoidea mater and Dura mater to enter Sinus sagittalis superior)
Pars meningea durae matris cranialis
Vv. superiores cerebri (in Spatium subarachnoideum)
V. anastomotica superior (Trolardi)
V. anastomotica inferior (of Labbé)
V. media superficialis cerebri
A. and V. meningea media
M. temporalis
Pars periostea durae matris cranialis
Vv. inferiores cerebri (in Spatium subarachnoideum)

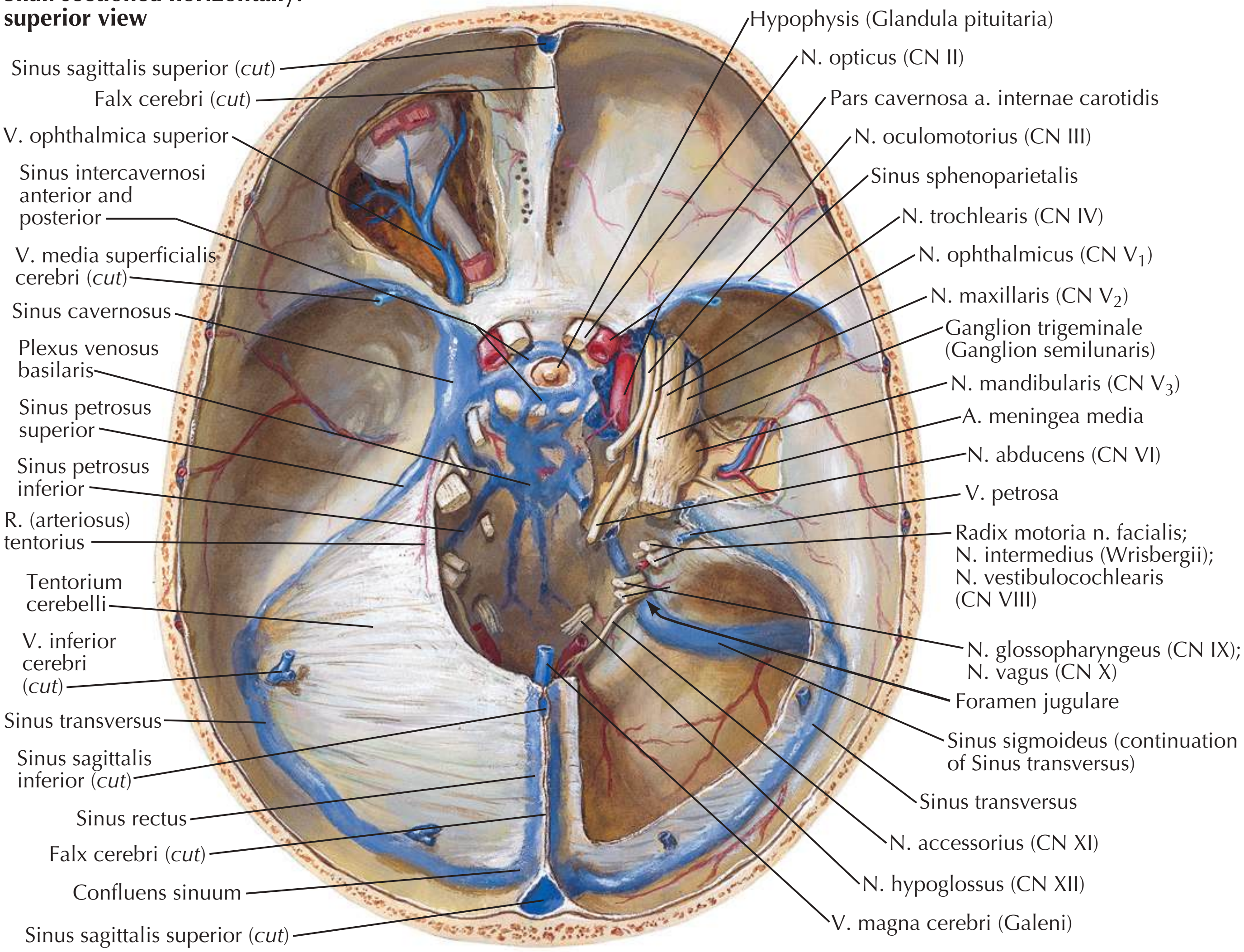
Dural Venous Sinuses: Sagittal Section

See also Plates 111, 117


Tentorium cerebelli
V. magna cerebri (Galeni)
Bridging veins (from Vv. superiores cerebri)
Sinus sagittalis superior
Falx cerebri
Sinus sagittalis inferior
Sinus sphenoparietalis
Sinus sagittalis superior
Sinus rectus
Sinus intercavernosi anterior and posterior
Sinus petrosus superior
Plexus venosus basilaris
Sinus petrosus inferior
To Foramen jugulare
Confluens sinuum
Falx cerebelli
Sinus occipitalis
Plexus venosus vertebralis (of Batson)
Sinus transversus
Sinus sigmoideus
F. Netter M.D.

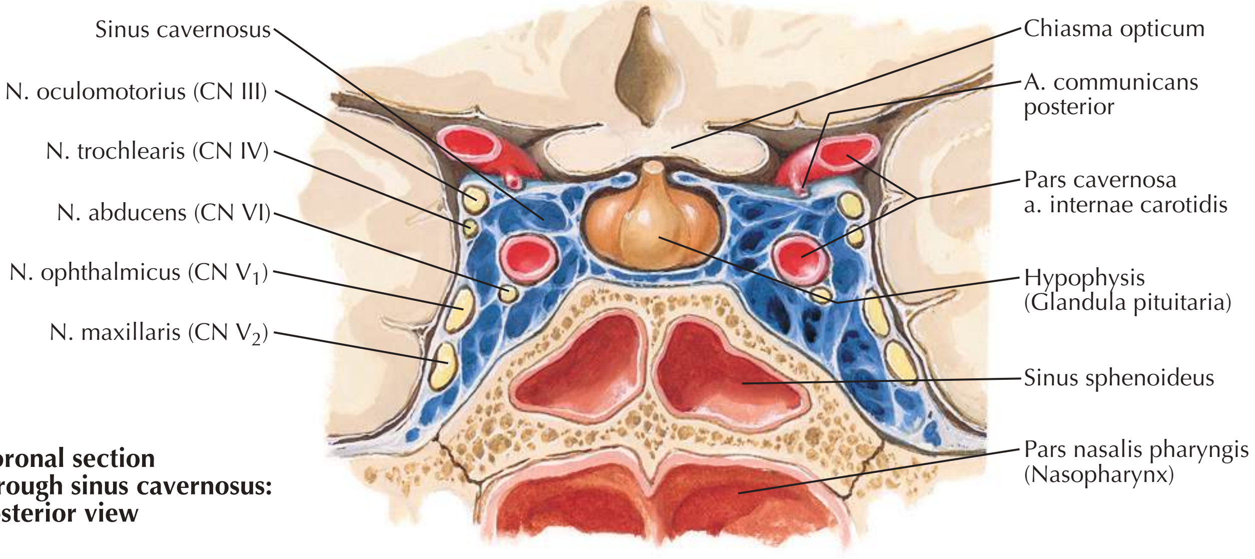
Dural Venous Sinuses (continued)

See also Plates 64, 97



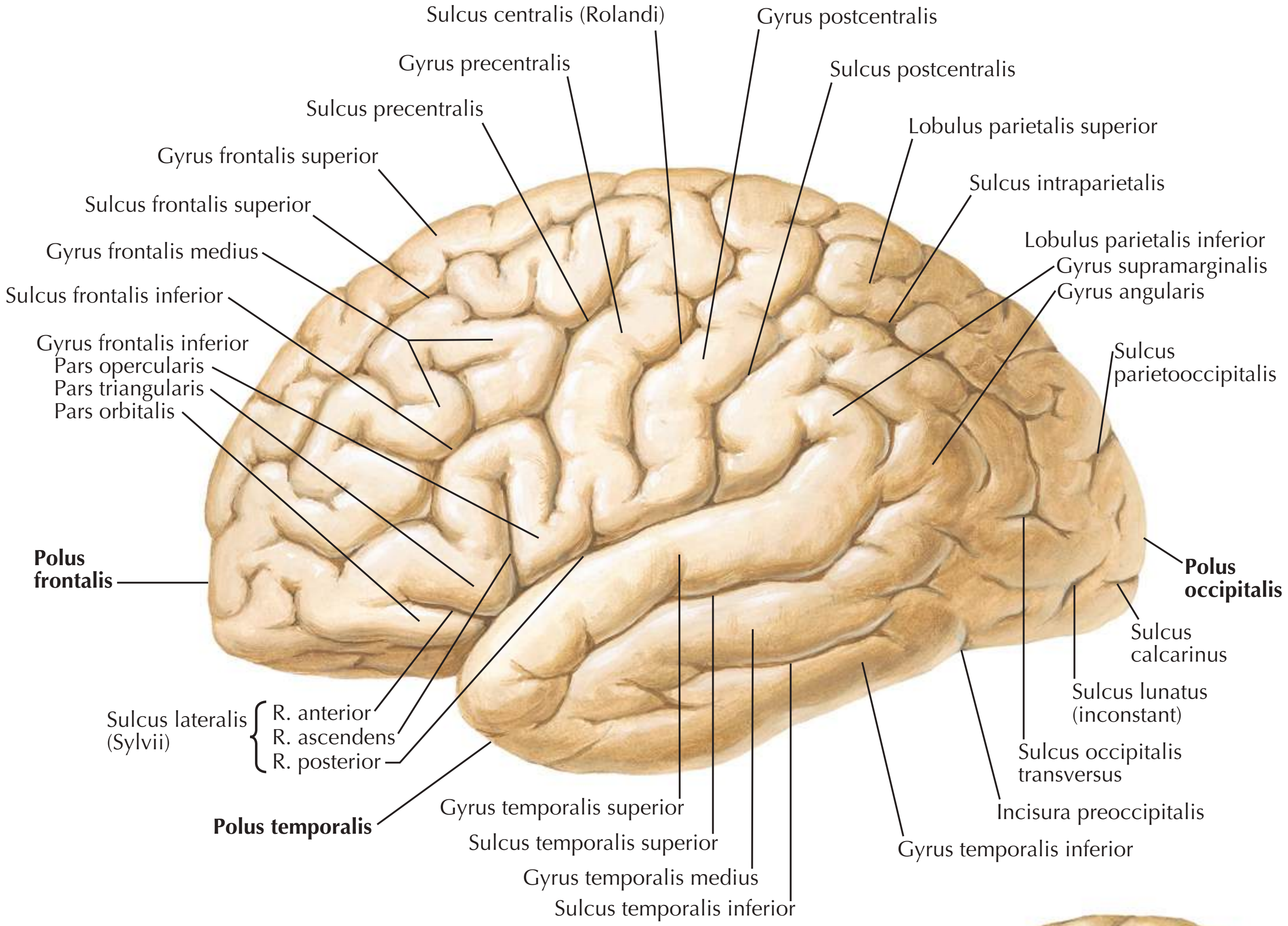
Skull sectioned horizontally: superior view

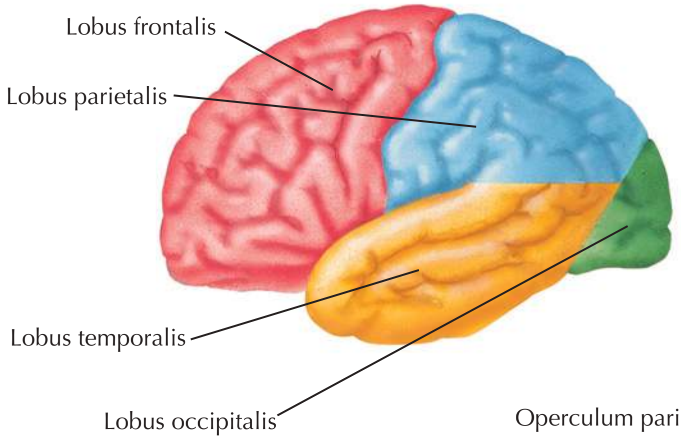
Sinus sagittalis superior (*cut*)
Falx cerebri (*cut*)
V. ophthalmica superior
Sinus intercavernosi anterior and posterior
V. media superficialis cerebri (*cut*)
Sinus cavernosus
Plexus venosus basilaris
Sinus petrosus superior
Sinus petrosus inferior
R. (arteriosus) tentorius
Tentorium cerebelli
V. inferior cerebri (*cut*)
Sinus transversus
Sinus sagittalis inferior (*cut*)
Sinus rectus
Falx cerebri (*cut*)
Confluens sinuum
Sinus sagittalis superior (*cut*)
Hypophysis (Glandula pituitaria)
N. opticus (CN II)
Pars cavernosa a. internae carotidis
N. oculomotorius (CN III)
Sinus sphenoparietalis
N. trochlearis (CN IV)
N. ophthalmicus (CN V_1)
N. maxillaris (CN V_2)
Ganglion trigeminale (Ganglion semilunaris)
N. mandibularis (CN V_3)
A. meningea media
N. abducens (CN VI)
V. petrosa
Radix motoria n. facialis; N. intermedius (Wrisbergii); N. vestibulocochlearis (CN VIII)
N. glossopharyngeus (CN IX); N. vagus (CN X)
Foramen jugulare
Sinus sigmoideus (continuation of Sinus transversus)
Sinus transversus
N. accessorius (CN XI)
N. hypoglossus (CN XII)
V. magna cerebri (Galeni)

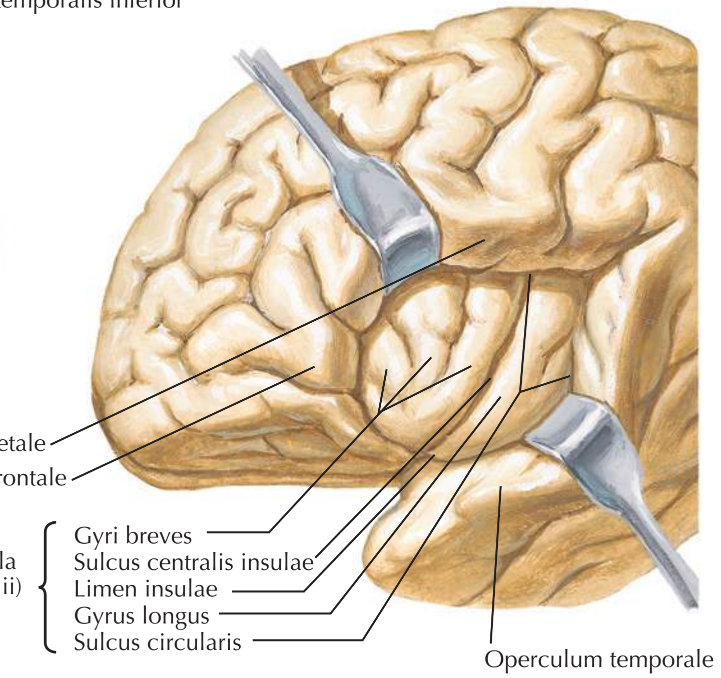


Coronal section through sinus cavernosus: posterior view

Sinus cavernosus
N. oculomotorius (CN III)
N. trochlearis (CN IV)
N. abducens (CN VI)
N. ophthalmicus (CN V_1)
N. maxillaris (CN V_2)
Chiasma opticum
A. communicans posterior
Pars cavernosa a. internae carotidis
Hypophysis (Glandula pituitaria)
Sinus sphenoideus
Pars nasalis pharyngis (Nasopharynx)

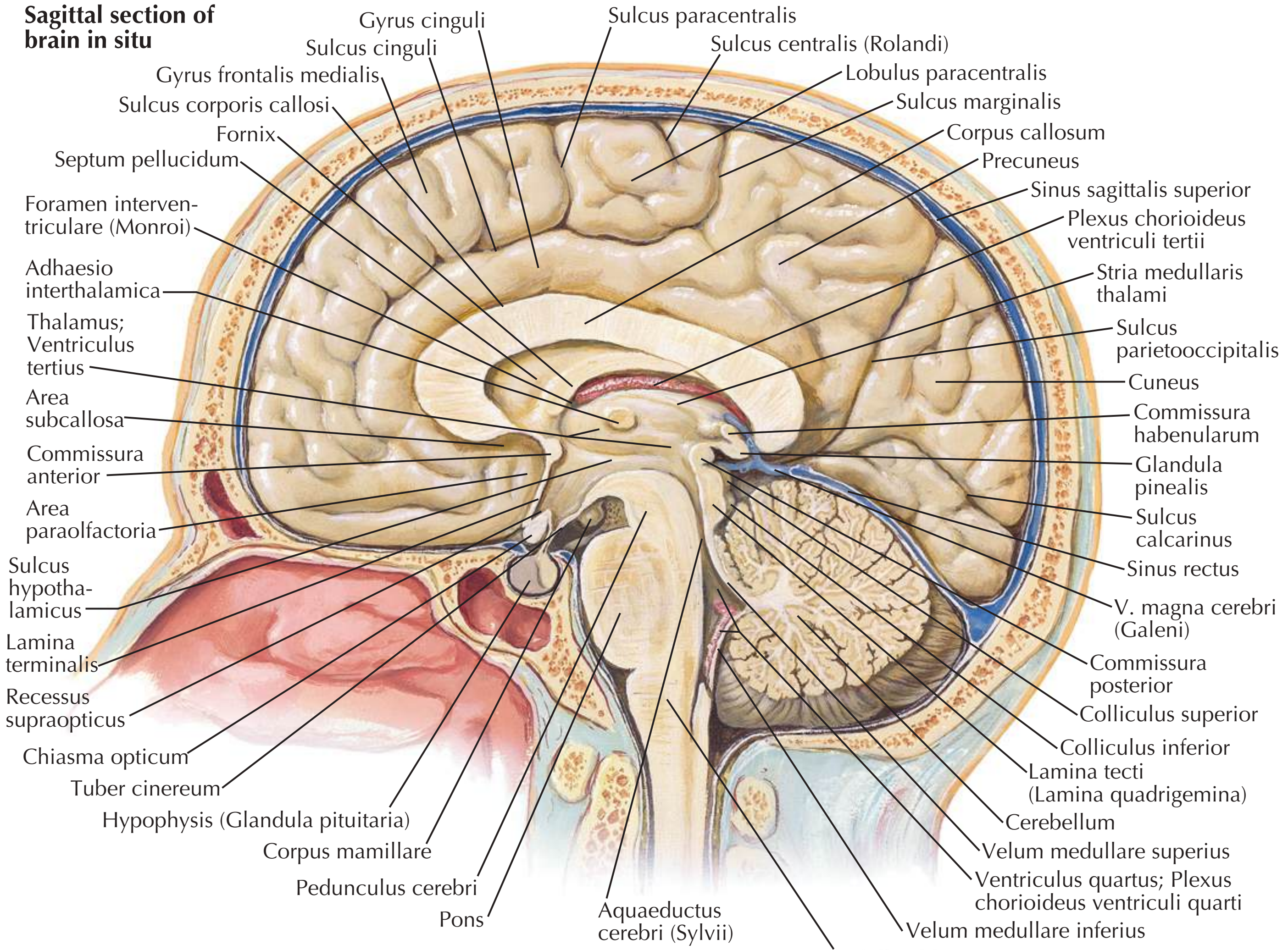

Sulcus centralis (Rolandi)
Gyrus postcentralis
Gyrus precentralis
Sulcus postcentralis
Sulcus precentralis
Lobulus parietalis superior
Gyrus frontalis superior
Sulcus intraparietalis
Sulcus frontalis superior
Lobulus parietalis inferior
Gyrus supramarginalis
Gyrus angularis
Gyrus frontalis medius
Sulcus frontalis inferior
Gyrus frontalis inferior
Pars opercularis
Pars triangularis
Pars orbitalis
Sulcus parietooccipitalis
Polus frontalis
Polus occipitalis
Sulcus calcarinus
Sulcus lunatus (inconstant)
Sulcus lateralis (Sylvii)
R. anterior
R. ascendens
R. posterior
Sulcus occipitalis transversus
Polus temporalis
Gyrus temporalis superior
Incisura preoccipitalis
Sulcus temporalis superior
Gyrus temporalis inferior
Gyrus temporalis medius
Sulcus temporalis inferior


Lobus frontalis
Lobus parietalis
Lobus temporalis
Lobus occipitalis

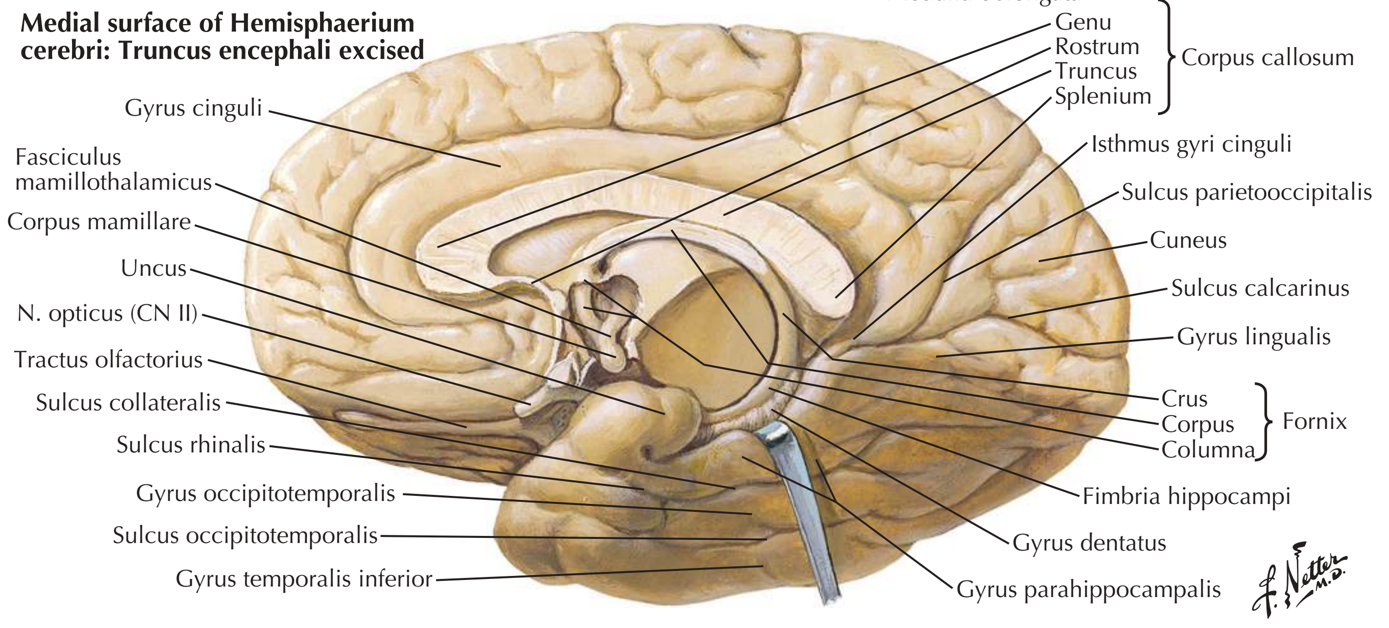

Operculum parietale
Operculum frontale
Insula (Reilii)
Gyri breves
Sulcus centralis insulae
Limen insulae
Gyrus longus
Sulcus circularis
Operculum temporale

See also Plate 158

Sagittal section of brain in situ

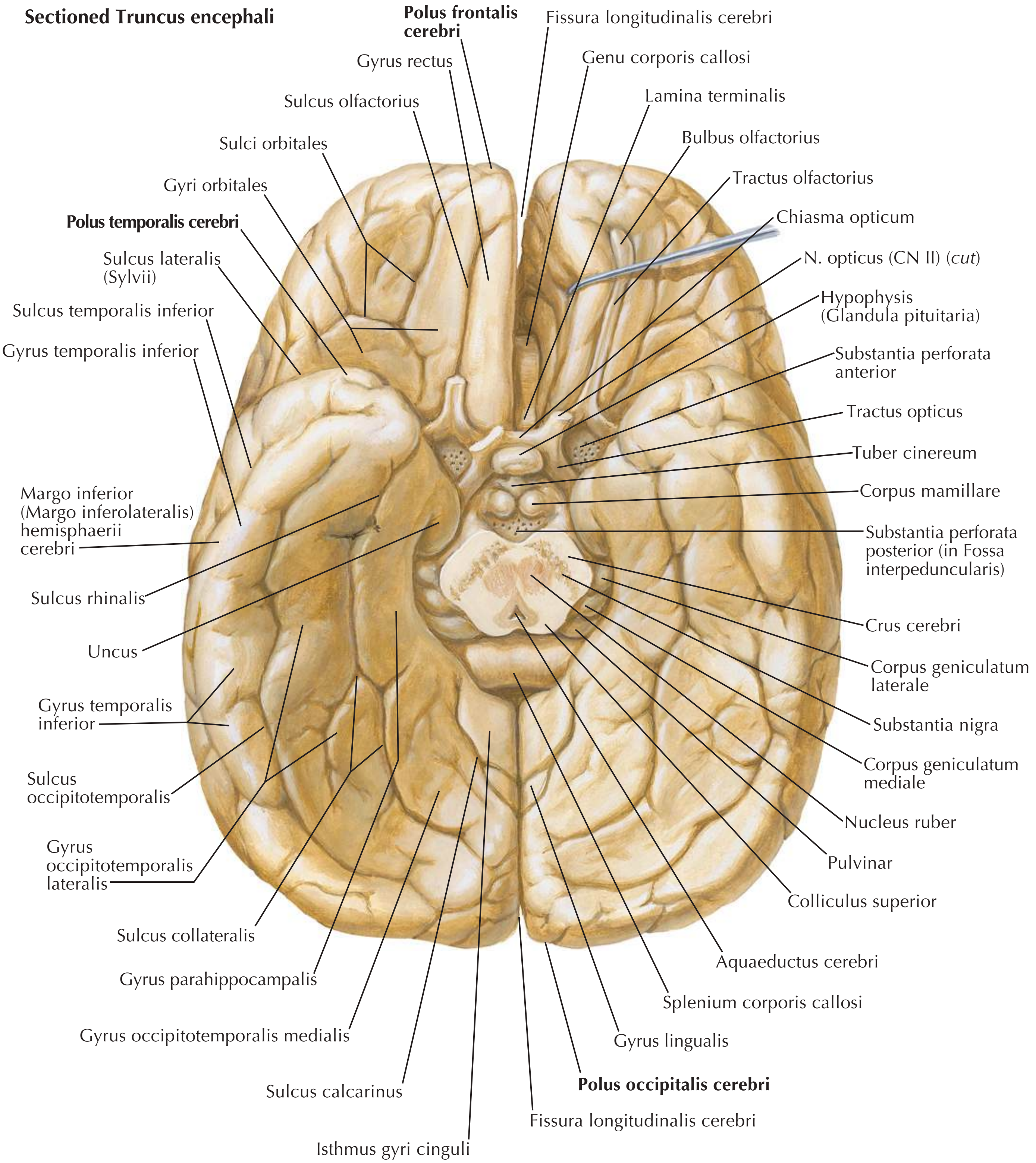

Gyrus cinguli
Sulcus cinguli
Gyrus frontalis medialis
Sulcus corporis callosi
Fornix
Septum pellucidum
Foramen interventriculare (Monroi)
Adhaesio interthalamica
Thalamus; Ventriculus tertius
Area subcallosa
Commissura anterior
Area paraolfactoria
Sulcus hypothalamicus
Lamina terminalis
Recessus supraopticus
Chiasma opticum
Tuber cinereum
Hypophysis (Glandula pituitaria)
Corpus mamillare
Pedunculus cerebri
Pons
Aquaeductus cerebri (Sylvii)
Medulla oblongata
Sulcus paracentralis
Sulcus centralis (Rolandi)
Lobulus paracentralis
Sulcus marginalis
Corpus callosum
Precuneus
Sinus sagittalis superior
Plexus chorioideus ventriculi tertii
Stria medullaris thalami
Sulcus parietooccipitalis
Cuneus
Commissura habenularum
Glandula pinealis
Sulcus calcarinus
Sinus rectus
V. magna cerebri (Galeni)
Commissura posterior
Colliculus superior
Colliculus inferior
Lamina tecti (Lamina quadrigemina)
Cerebellum
Velum medullare superius
Ventriculus quartus; Plexus chorioideus ventriculi quarti
Velum medullare inferius

Medial surface of Hemisphaerium cerebri: Truncus encephali excised

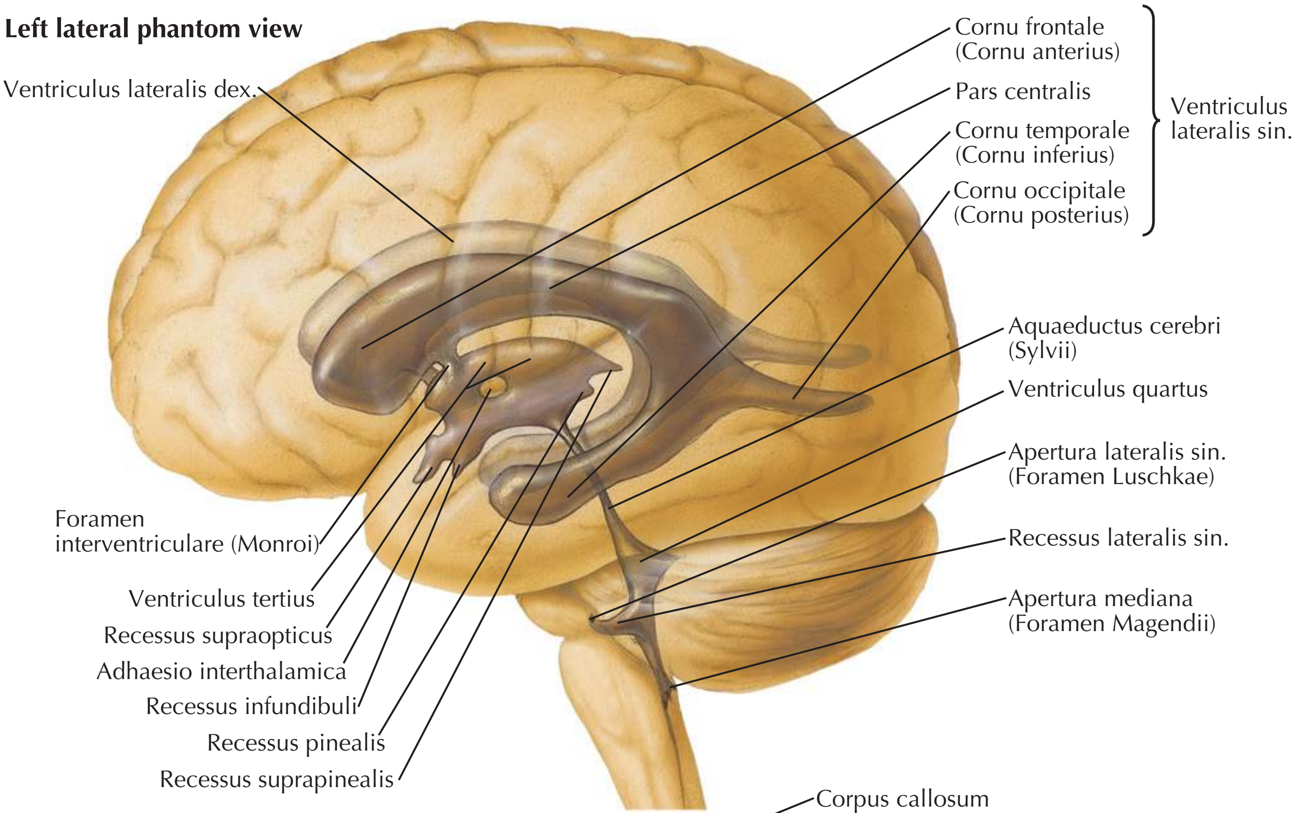

Gyrus cinguli
Fasciculus mamillothalamicus
Corpus mamillare
Uncus
N. opticus (CN II)
Tractus olfactorius
Sulcus collateralis
Sulcus rhinalis
Gyrus occipitotemporalis
Sulcus occipitotemporalis
Gyrus temporalis inferior
Genu
Rostrum
Truncus
Splenium
Corpus callosum
Isthmus gyri cinguli
Sulcus parietooccipitalis
Cuneus
Sulcus calcarinus
Gyrus lingualis
Crus
Corpus
Columna
Fornix
Fimbria hippocampi
Gyrus dentatus
Gyrus parahippocampalis

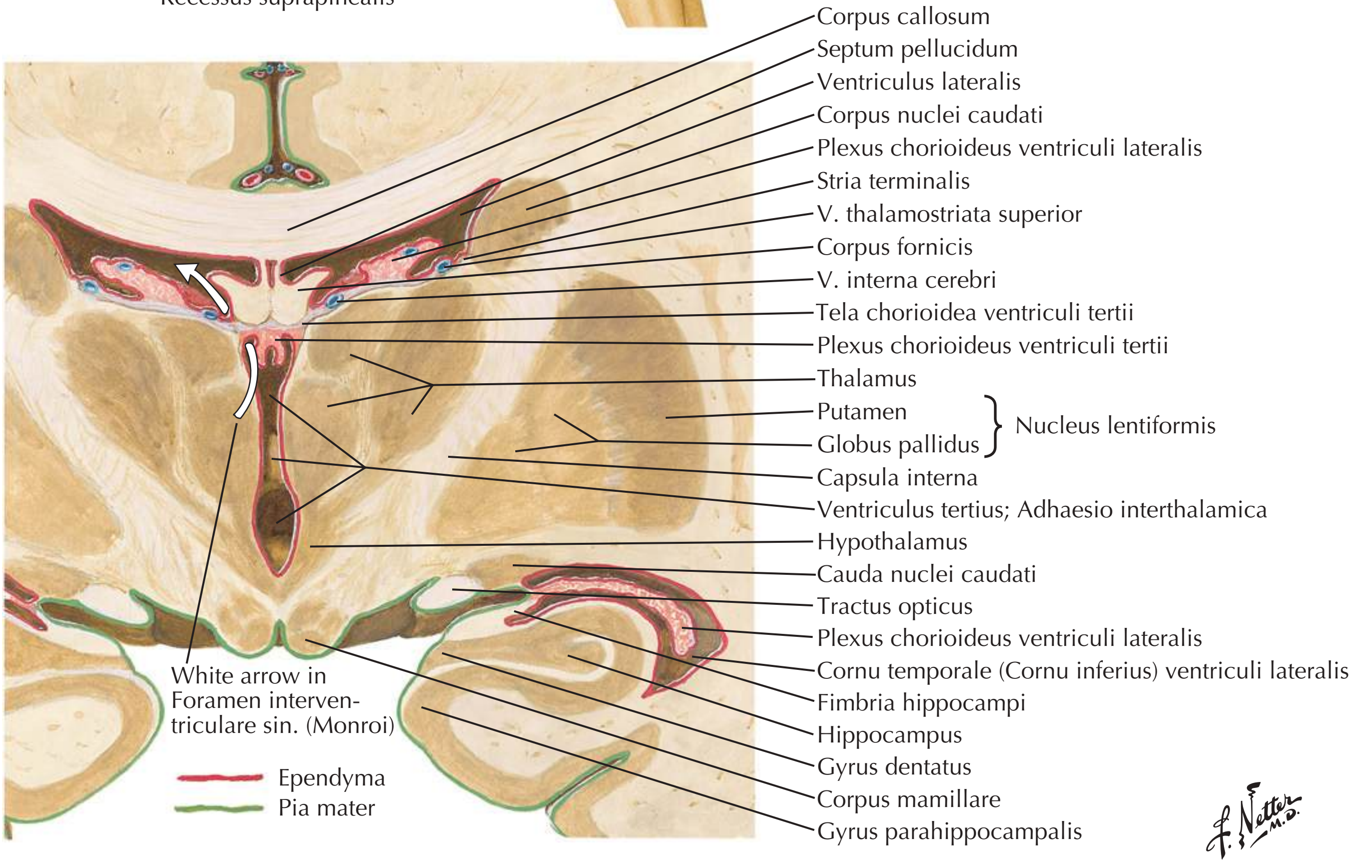
Brain: Inferior View

See also Plate 117


Sectioned Truncus encephali
Polus frontalis cerebri
Fissura longitudinalis cerebri
Gyrus rectus
Genu corporis callosi
Sulcus olfactorius
Lamina terminalis
Sulci orbitales
Bulbus olfactorius
Gyri orbitales
Tractus olfactorius
Polus temporalis cerebri
Chiasma opticum
Sulcus lateralis (Sylvii)
N. opticus (CN II) (*cut*)
Sulcus temporalis inferior
Hypophysis (Glandula pituitaria)
Gyrus temporalis inferior
Substantia perforata anterior
Tractus opticus
Tuber cinereum
Margo inferior (Margo inferolateralis) hemisphaerii cerebri
Corpus mamillare
Substantia perforata posterior (in Fossa interpeduncularis)
Sulcus rhinalis
Crus cerebri
Uncus
Corpus geniculatum laterale
Gyrus temporalis inferior
Substantia nigra
Sulcus occipitotemporalis
Corpus geniculatum mediale
Nucleus ruber
Gyrus occipitotemporalis lateralis
Pulvinar
Colliculus superior
Sulcus collateralis
Aquaeductus cerebri
Gyrus parahippocampalis
Splenium corporis callosi
Gyrus occipitotemporalis medialis
Gyrus lingualis
Polus occipitalis cerebri
Sulcus calcarinus
Fissura longitudinalis cerebri
Isthmus gyri cinguli

Left lateral phantom view

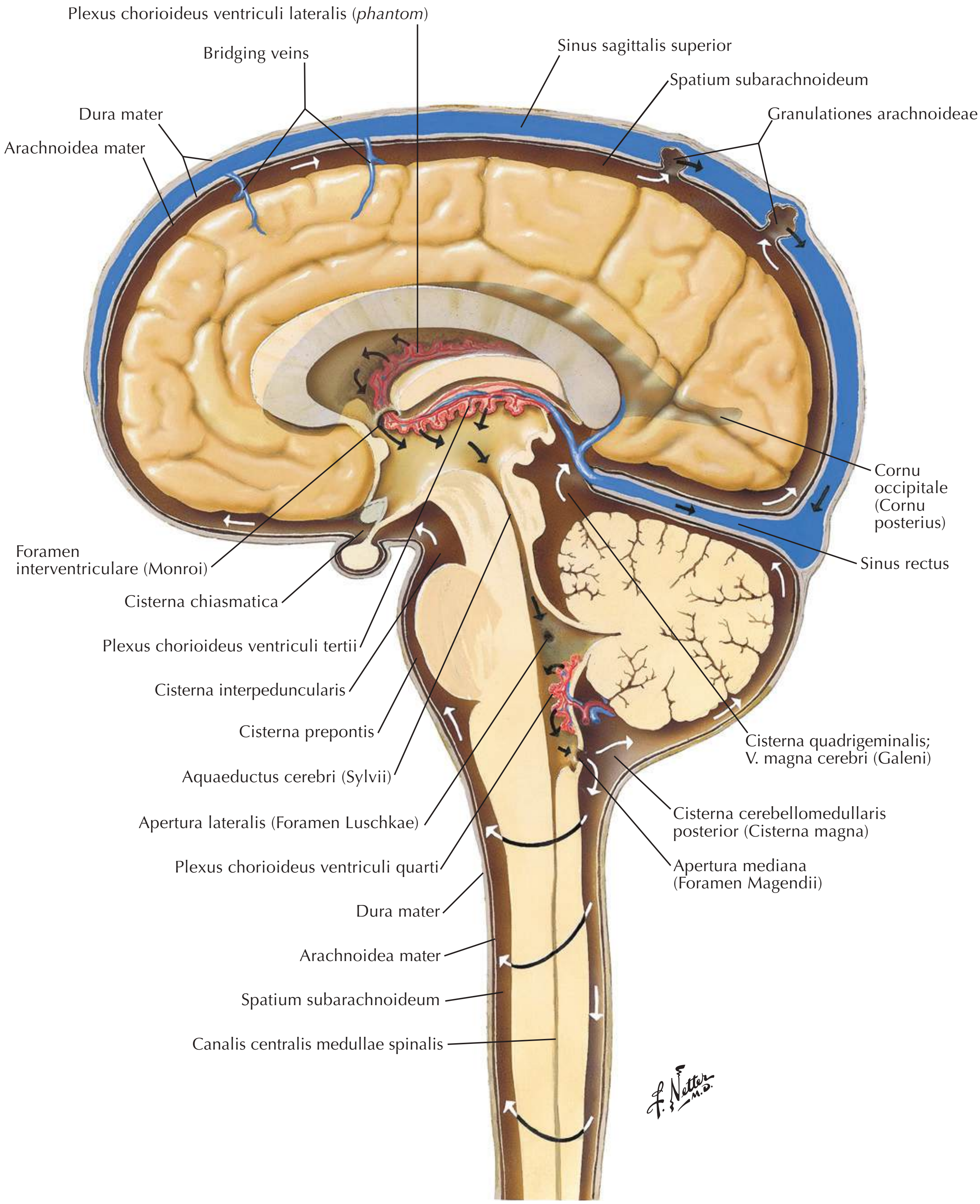

Ventriculus lateralis dex.
Cornu frontale (Cornu anterius)
Pars centralis
Cornu temporale (Cornu inferius)
Cornu occipitale (Cornu posterius)
Ventriculus lateralis sin.
Aquaeductus cerebri (Sylvii)
Ventriculus quartus
Apertura lateralis sin. (Foramen Luschkae)
Recessus lateralis sin.
Apertura mediana (Foramen Magendii)
Foramen interventriculare (Monroi)
Ventriculus tertius
Recessus supraopticus
Adhaesio interthalamica
Recessus infundibuli
Recessus pinealis
Recessus suprapinealis


Corpus callosum
Septum pellucidum
Ventriculus lateralis
Corpus nuclei caudati
Plexus chorioideus ventriculi lateralis
Stria terminalis
V. thalamostriata superior
Corpus fornicis
V. interna cerebri
Tela chorioidea ventriculi tertii
Plexus chorioideus ventriculi tertii
Thalamus
Putamen
Globus pallidus
Nucleus lentiformis
Capsula interna
Ventriculus tertius; Adhaesio interthalamica
Hypothalamus
Cauda nuclei caudati
Tractus opticus
Plexus chorioideus ventriculi lateralis
Cornu temporale (Cornu inferius) ventriculi lateralis
Fimbria hippocampi
Hippocampus
Gyrus dentatus
Corpus mamillare
Gyrus parahippocampalis
White arrow in Foramen interventriculare sin. (Monroi)
Ependyma
Pia mater

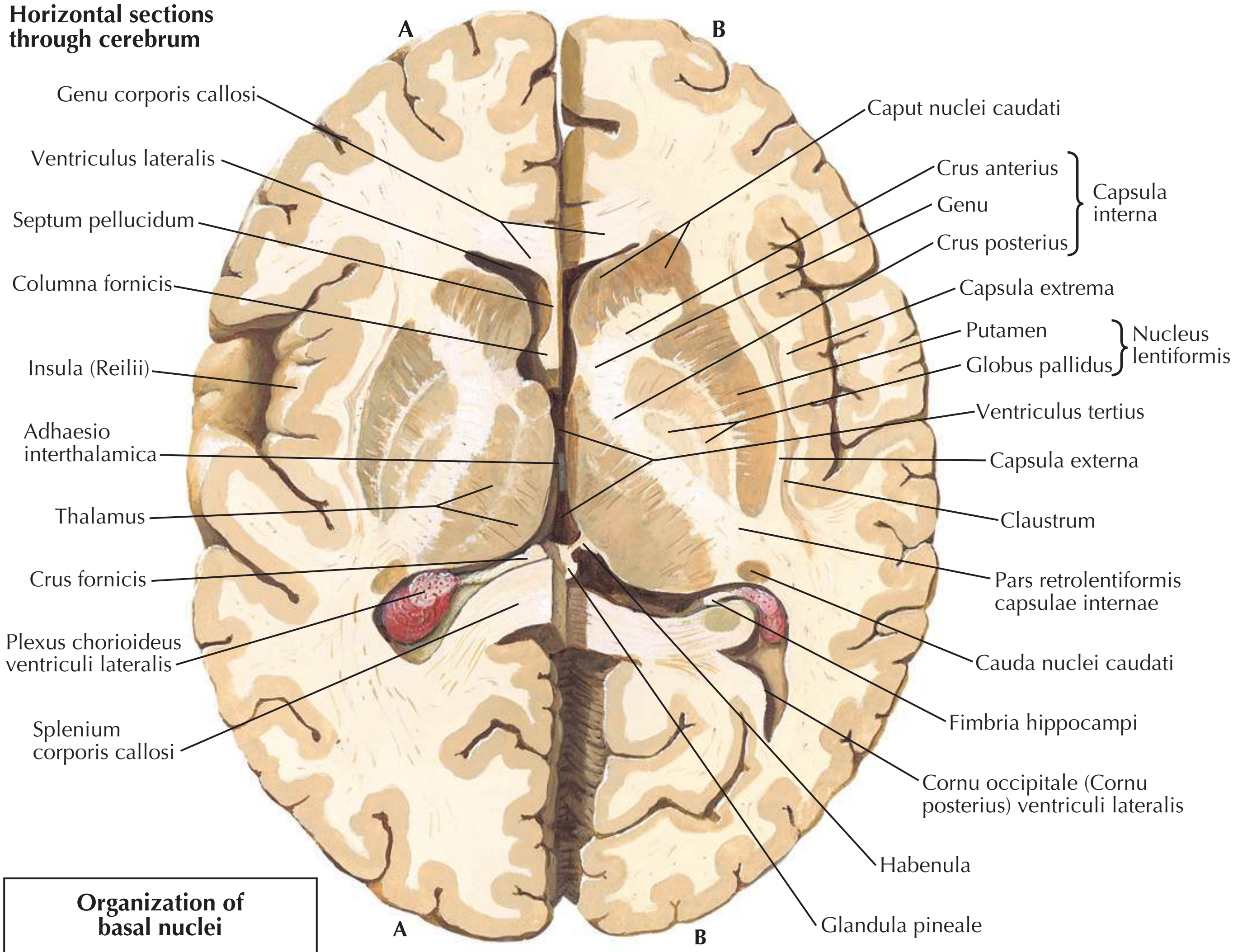
Coronal section of brain: posterior view

Circulation of Cerebrospinal Fluid

See also Plates 119, 157


Plexus chorioideus ventriculi lateralis (*phantom*)
Bridging veins
Sinus sagittalis superior
Spatium subarachnoideum
Granulationes arachnoideae
Dura mater
Arachnoidea mater
Cornu occipitale (Cornu posterius)
Sinus rectus
Foramen interventriculare (Monroi)
Cisterna chiasmatica
Plexus chorioideus ventriculi tertii
Cisterna interpeduncularis
Cisterna prepontis
Aquaeductus cerebri (Sylvii)
Apertura lateralis (Foramen Luschkae)
Plexus chorioideus ventriculi quarti
Dura mater
Arachnoidea mater
Spatium subarachnoideum
Canalis centralis medullae spinalis
Cisterna quadrigeminalis; V. magna cerebri (Galeni)
Cisterna cerebellomedullaris posterior (Cisterna magna)
Apertura mediana (Foramen Magendii)

Horizontal sections through cerebrum


A
B
Genu corporis callosi
Ventriculus lateralis
Septum pellucidum
Columna fornicis
Insula (Reilii)
Adhaesio interthalamica
Thalamus
Crus fornicis
Plexus chorioideus ventriculi lateralis
Splenium corporis callosi
Caput nuclei caudati
Crus anterius
Genu
Crus posterius
Capsula interna
Capsula extrema
Putamen
Globus pallidus
Nucleus lentiformis
Ventriculus tertius
Capsula externa
Claustrum
Pars retrolentiformis capsulae internae
Cauda nuclei caudati
Fimbria hippocampi
Cornu occipitale (Cornu posterius) ventriculi lateralis
Habenula
Glandula pineale
A
B

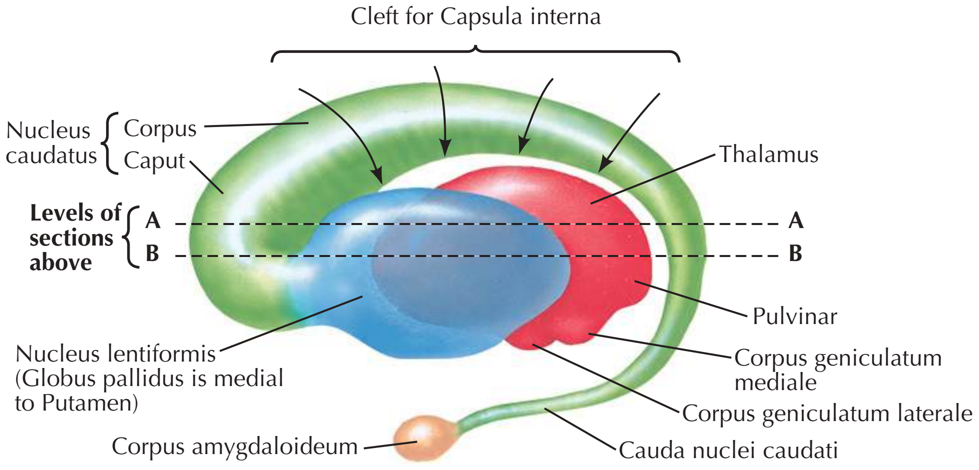
Organization of basal nuclei

Nucleus caudatus Putamen Globus pallidus

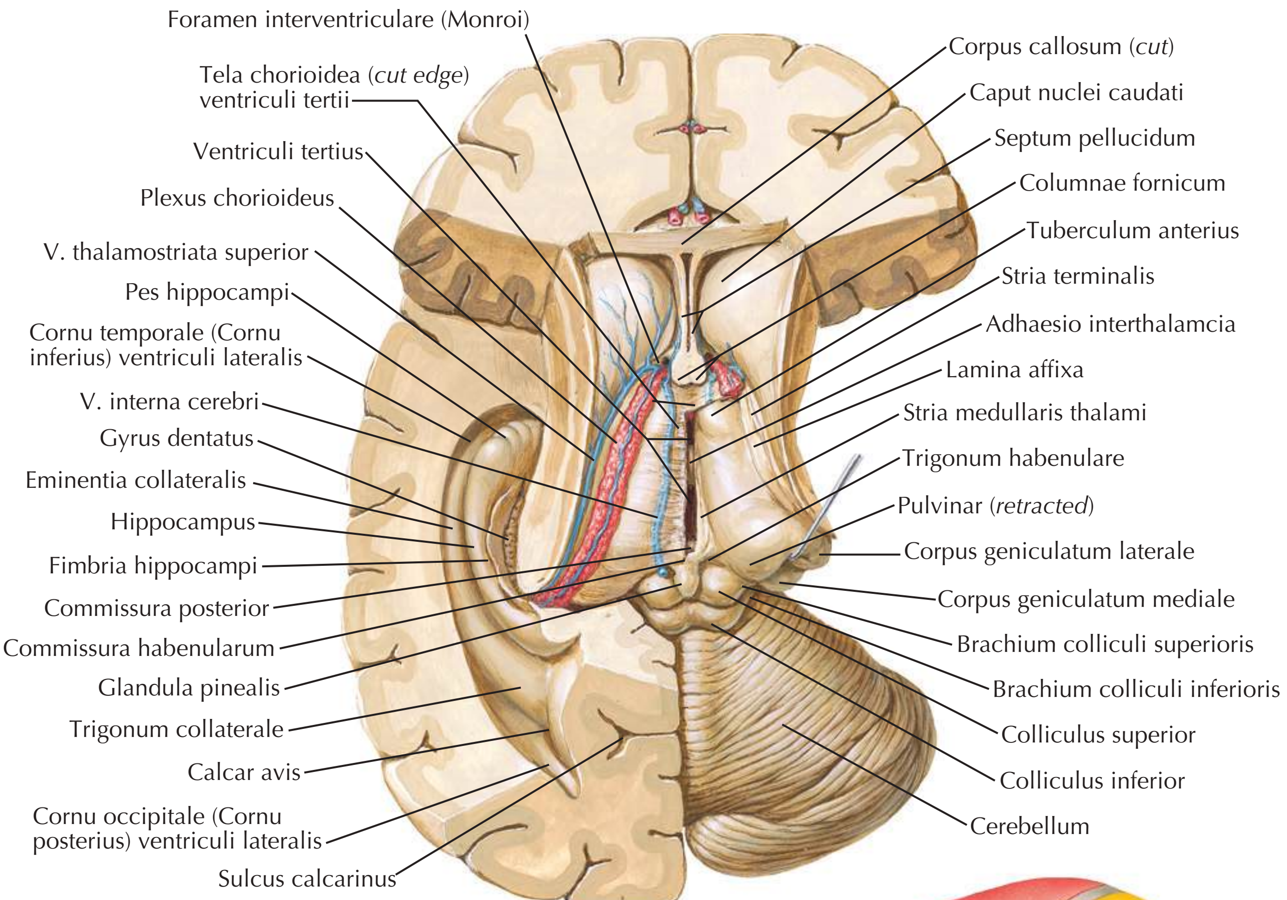
Striatum Nucleus lentiformis

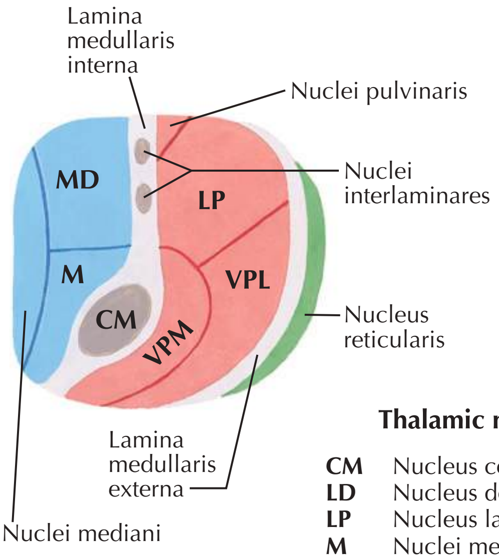
Corpus striatum

Nuclei basales


Cleft for Capsula interna
Nucleus caudatus
Corpus
Caput
Thalamus
Levels of sections above
A
B
A
B
Pulvinar
Nucleus lentiformis (Globus pallidus is medial to Putamen)
Corpus geniculatum mediale
Corpus geniculatum laterale
Corpus amygdaloideum
Cauda nuclei caudati

Interrelationship of Thalamus, Nucleus lentiformis, Nucleus caudatus, and Corpus amygdaloideum (schema): left lateral view

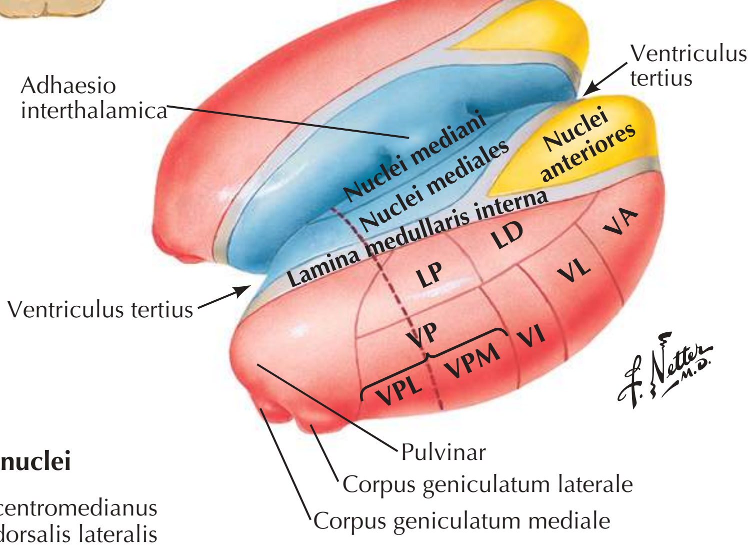

Foramen interventriculare (Monroi)
Tela chorioidea (*cut edge*) ventriculi tertii
Ventriculi tertius
Plexus chorioideus
V. thalamostriata superior
Pes hippocampi
Cornu temporale (Cornu inferius) ventriculi lateralis
V. interna cerebri
Gyrus dentatus
Eminentia collateralis
Hippocampus
Fimbria hippocampi
Commissura posterior
Commissura habenularum
Glandula pinealis
Trigonum collaterale
Calcar avis
Cornu occipitale (Cornu posterius) ventriculi lateralis
Sulcus calcarinus
Corpus callosum (*cut*)
Caput nuclei caudati
Septum pellucidum
Columnae fornicum
Tuberculum anterius
Stria terminalis
Adhaesio interthalamcia
Lamina affixa
Stria medullaris thalami
Trigonum habenulare
Pulvinar (*retracted*)
Corpus geniculatum laterale
Corpus geniculatum mediale
Brachium colliculi superioris
Brachium colliculi inferioris
Colliculus superior
Colliculus inferior
Cerebellum


Lamina medullaris interna
Nuclei pulvinaris
MD
LP
Nuclei interlaminares
M
VPL
CM
VPM
Nucleus reticularis
Lamina medullaris externa
Nuclei mediani

Schematic section through thalamus
(at level of broken line shown in figure at right)

Thalamic nuclei

CM	Nucleus centromedianus
LD	Nucleus dorsalis lateralis
LP	Nucleus lateralis posterior
M	Nuclei mediales
MD	Nucleus mediodorsalis
VA	Nucleus ventralis anterior
VI	Nucleus ventralis intermedius
VL	Nuclei ventrales laterales
VP	Nuclei ventrales posteriores
VPL	Nucleus ventralis posterolateralis
VPM	Nucleus ventralis posteromedialis

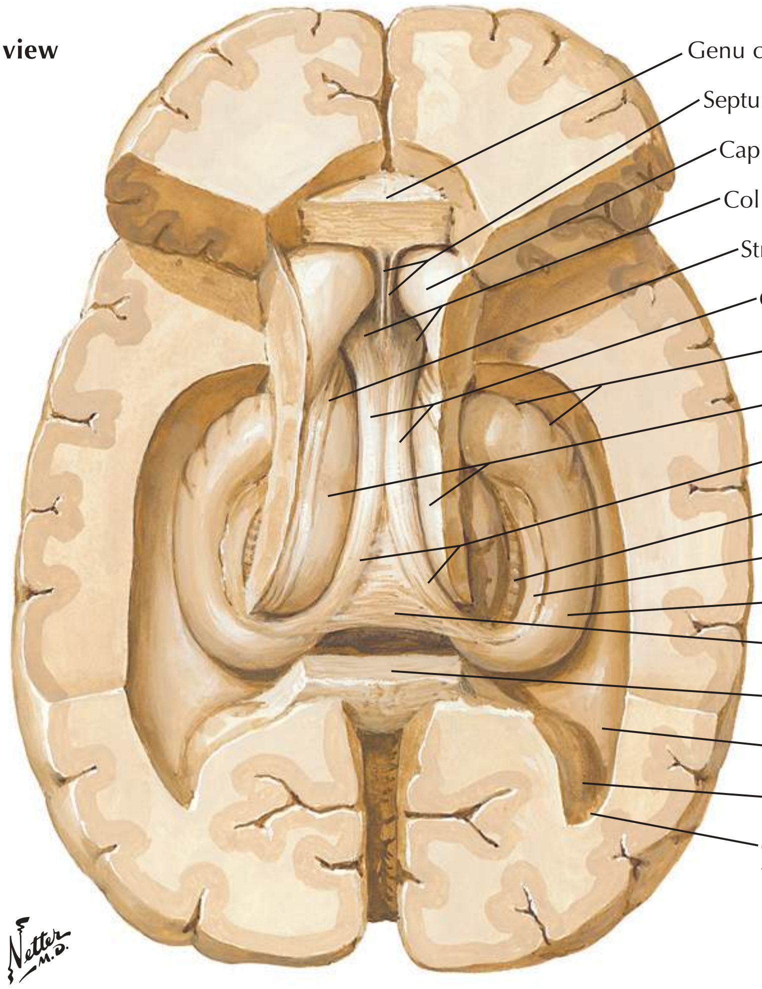

Adhaesio interthalamica
Ventriculus tertius
Nuclei mediani
Nuclei mediales
Nuclei anteriores
Lamina medullaris interna
LD
VA
LP
VL
Ventriculus tertius
VP
VI
VPM
VPL
Pulvinar
Corpus geniculatum laterale
Corpus geniculatum mediale
F. Netter M.D.

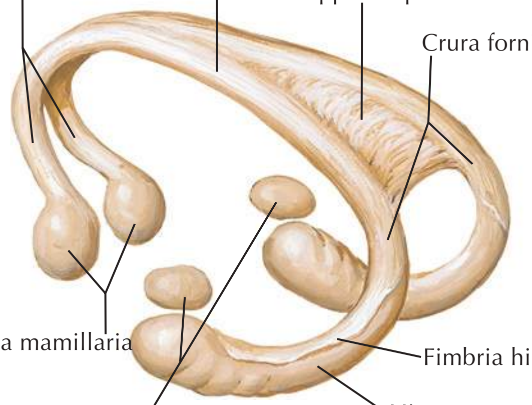
Schematic representation of thalamus
(Lamina medullaris externa and Nuclei reticulares removed)

🟥 **Nuclei laterales**
🟦 **Nuclei mediales and mediani**
🟨 **Nuclei anteriores**

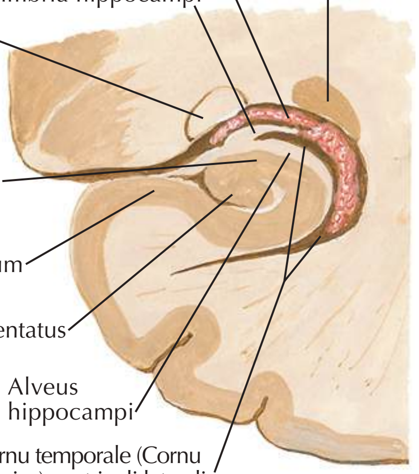
Hippocampus and Fornix

Superior view


Genu corporis callosi (*cut*)
Septum pellucidum; Cavum septi pellucidi
Caput nuclei caudati
Columnae fornicum
Stria terminalis
Corpora fornicum
Pes hippocampi
Thalami
Crura fornicum
Gyrus dentatus
Fimbria hippocampi
Hippocampus
Commissura hippocampi
Splenium corporis callosi (*cut*)
Ventriculus lateralis
Calcar avis
Cornu occipitale (Cornu posterius) ventriculi lateralis

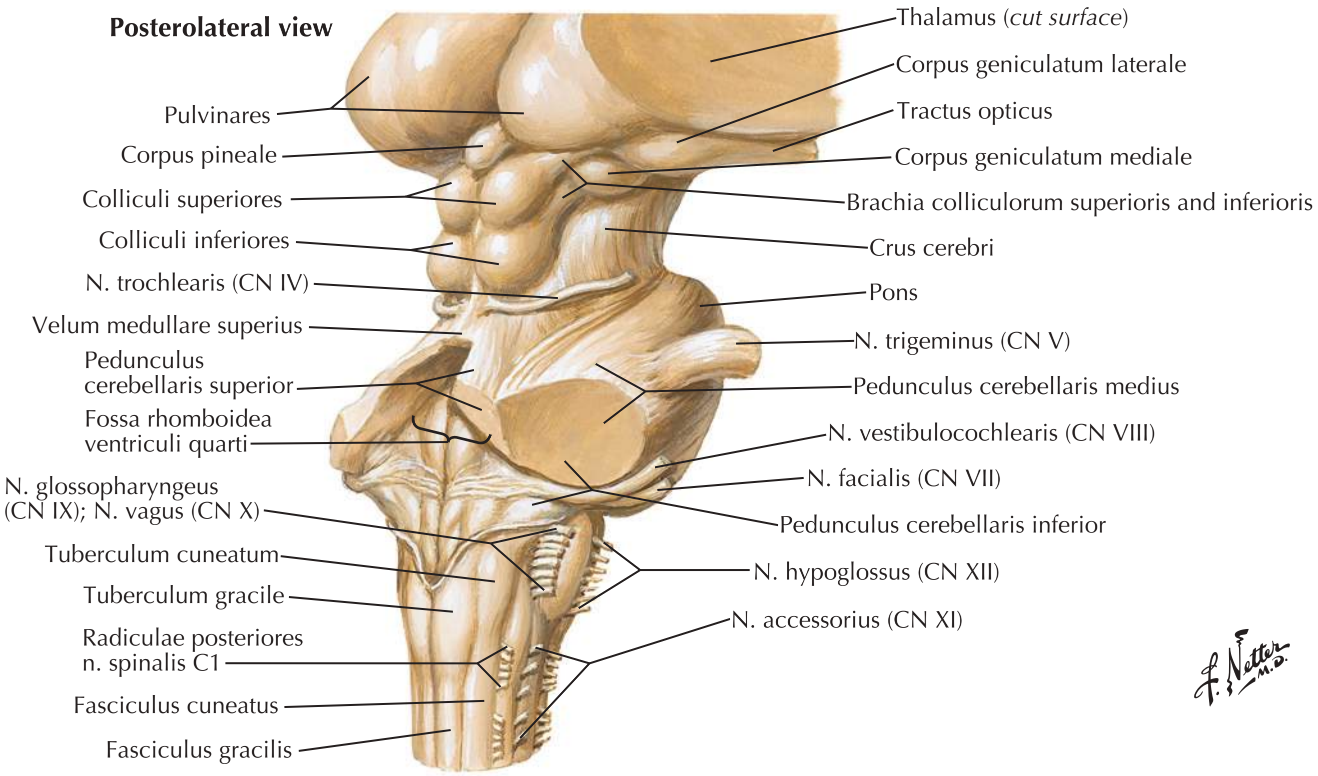

Corpus fornicis
Columnae fornicum
Commissura hippocampi
Crura fornicum
Corpora mamillaria
Fimbria hippocampi
Corpora amygdaloidea
Hippocampus

Fornix: schema

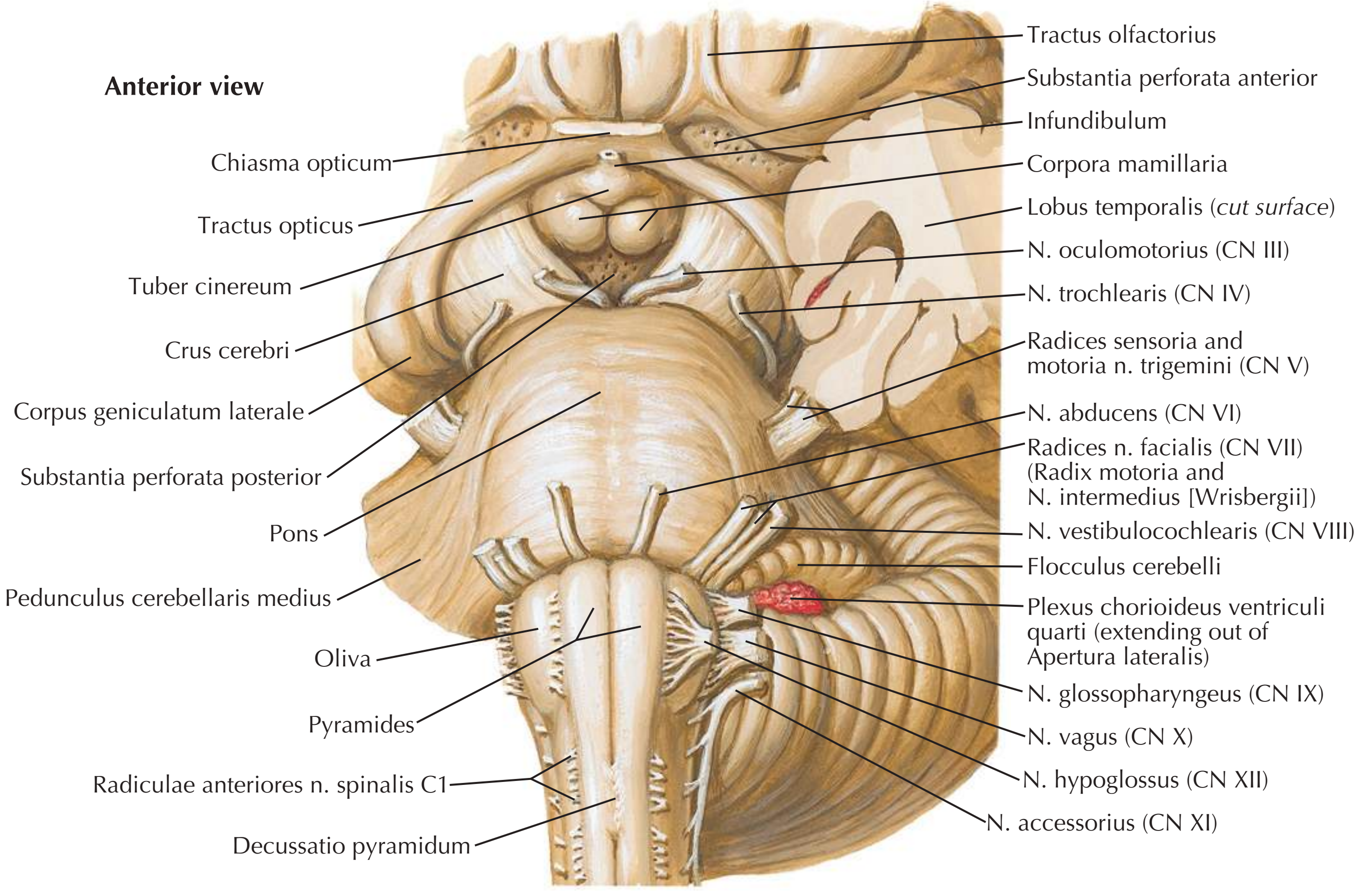

Cauda nuclei caudati
Plexus chorioideus
Fimbria hippocampi
Tractus opticus
Hippocampus
Subiculum
Gyrus dentatus
Alveus hippocampi
Cornu temporale (Cornu inferius) ventriculi lateralis

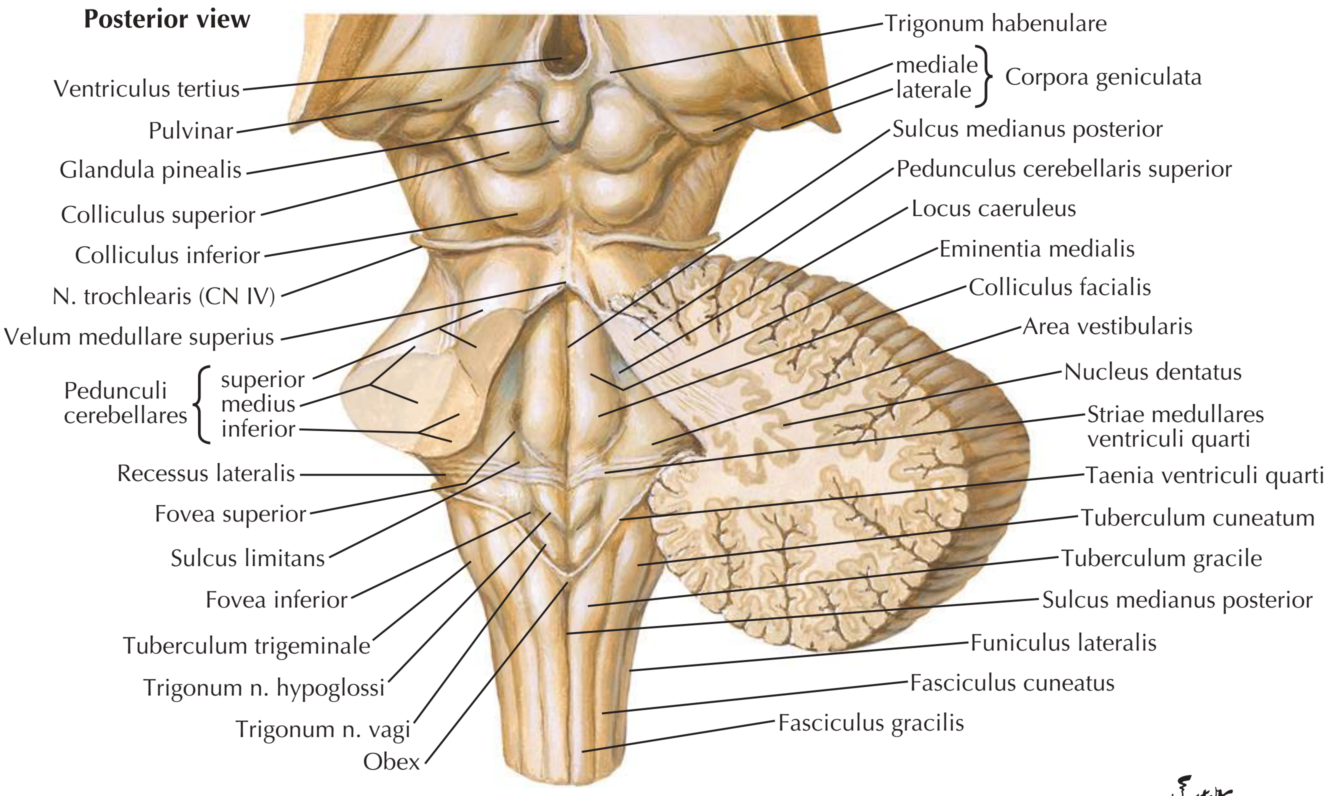
Coronal section: posterior view

Posterolateral view

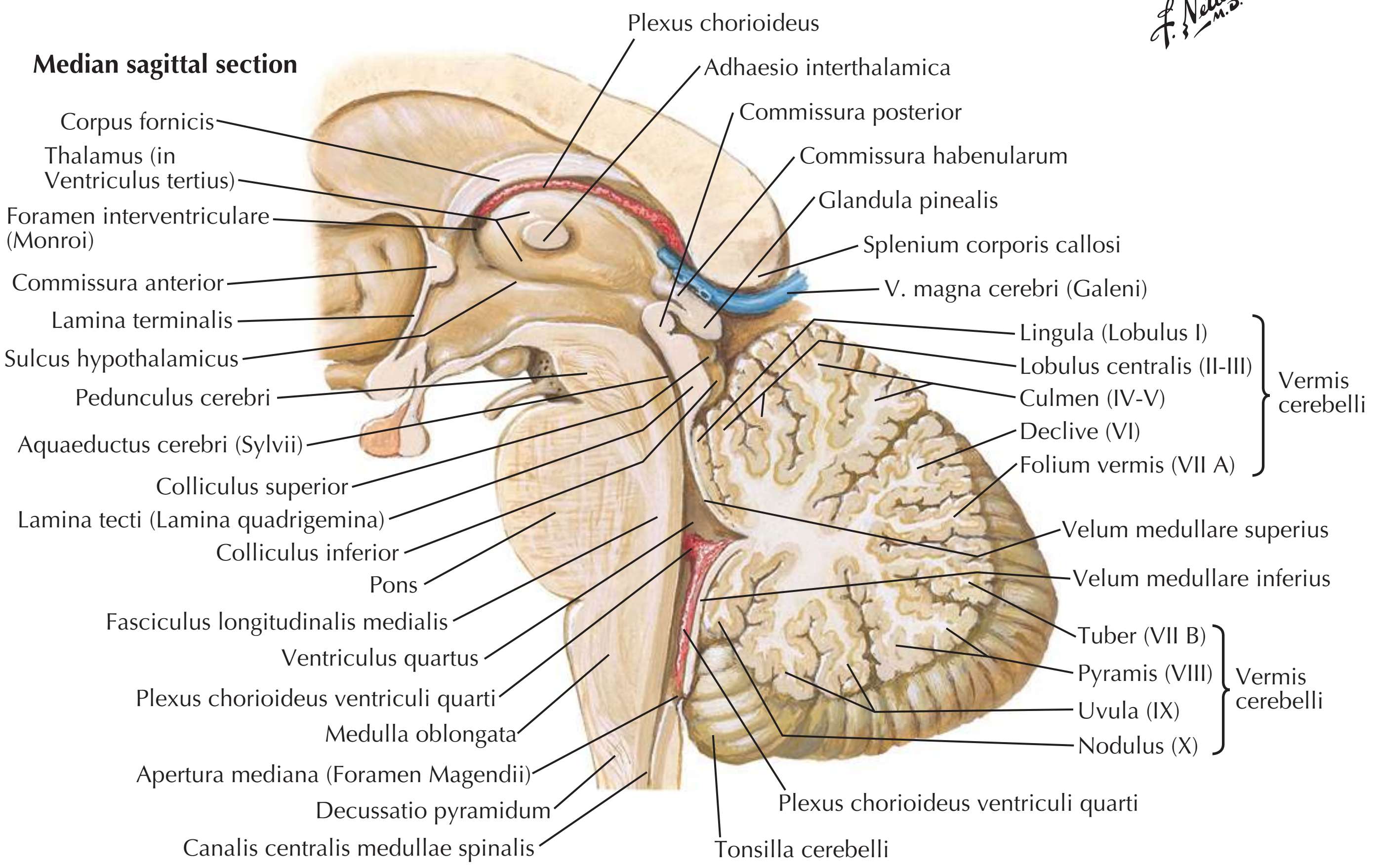

Thalamus (*cut surface*)
Corpus geniculatum laterale
Tractus opticus
Corpus geniculatum mediale
Brachia colliculorum superioris and inferioris
Crus cerebri
Pons
N. trigeminus (CN V)
Pedunculus cerebellaris medius
N. vestibulocochlearis (CN VIII)
N. facialis (CN VII)
Pedunculus cerebellaris inferior
N. hypoglossus (CN XII)
N. accessorius (CN XI)
Pulvinares
Corpus pineale
Colliculi superiores
Colliculi inferiores
N. trochlearis (CN IV)
Velum medullare superius
Pedunculus cerebellaris superior
Fossa rhomboidea ventriculi quarti
N. glossopharyngeus (CN IX); N. vagus (CN X)
Tuberculum cuneatum
Tuberculum gracile
Radiculae posteriores n. spinalis C1
Fasciculus cuneatus
Fasciculus gracilis

Anterior view


Tractus olfactorius
Substantia perforata anterior
Infundibulum
Corpora mamillaria
Lobus temporalis (*cut surface*)
N. oculomotorius (CN III)
N. trochlearis (CN IV)
Radices sensoria and motoria n. trigemini (CN V)
N. abducens (CN VI)
Radices n. facialis (CN VII) (Radix motoria and N. intermedius [Wrisbergii])
N. vestibulocochlearis (CN VIII)
Flocculus cerebelli
Plexus chorioideus ventriculi quarti (extending out of Apertura lateralis)
N. glossopharyngeus (CN IX)
N. vagus (CN X)
N. hypoglossus (CN XII)
N. accessorius (CN XI)
Chiasma opticum
Tractus opticus
Tuber cinereum
Crus cerebri
Corpus geniculatum laterale
Substantia perforata posterior
Pons
Pedunculus cerebellaris medius
Oliva
Pyramides
Radiculae anteriores n. spinalis C1
Decussatio pyramidum

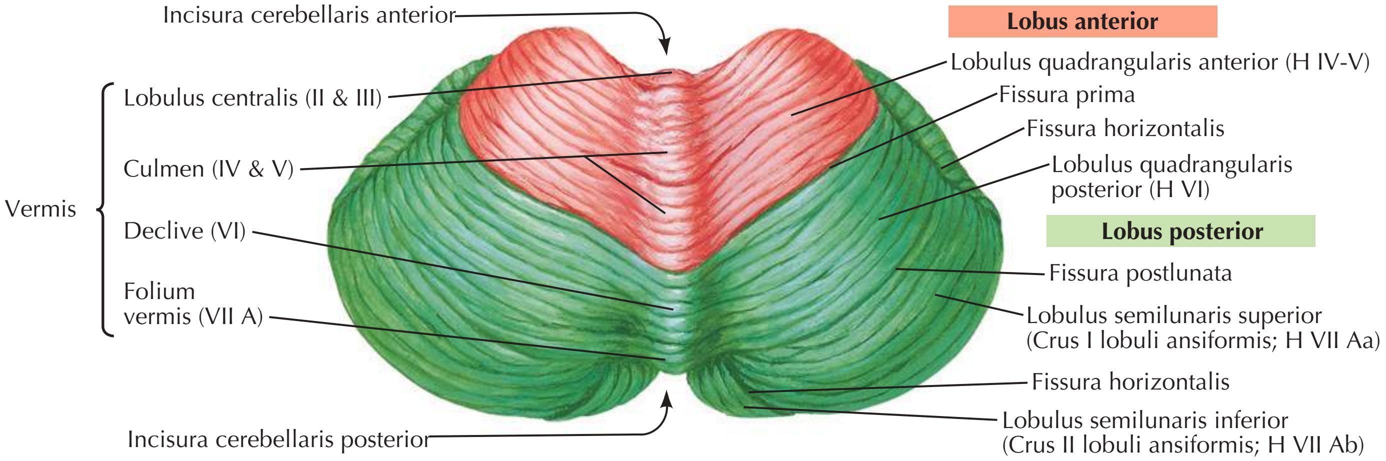

Posterior view

Ventriculus tertius
Pulvinar
Glandula pinealis
Colliculus superior
Colliculus inferior
N. trochlearis (CN IV)
Velum medullare superius
Pedunculi cerebellares
superior
medius
inferior
Recessus lateralis
Fovea superior
Sulcus limitans
Fovea inferior
Tuberculum trigeminale
Trigonum n. hypoglossi
Trigonum n. vagi
Obex
Trigonum habenulare
mediale
laterale
Corpora geniculata
Sulcus medianus posterior
Pedunculus cerebellaris superior
Locus caeruleus
Eminentia medialis
Colliculus facialis
Area vestibularis
Nucleus dentatus
Striae medullares ventriculi quarti
Taenia ventriculi quarti
Tuberculum cuneatum
Tuberculum gracile
Sulcus medianus posterior
Funiculus lateralis
Fasciculus cuneatus
Fasciculus gracilis

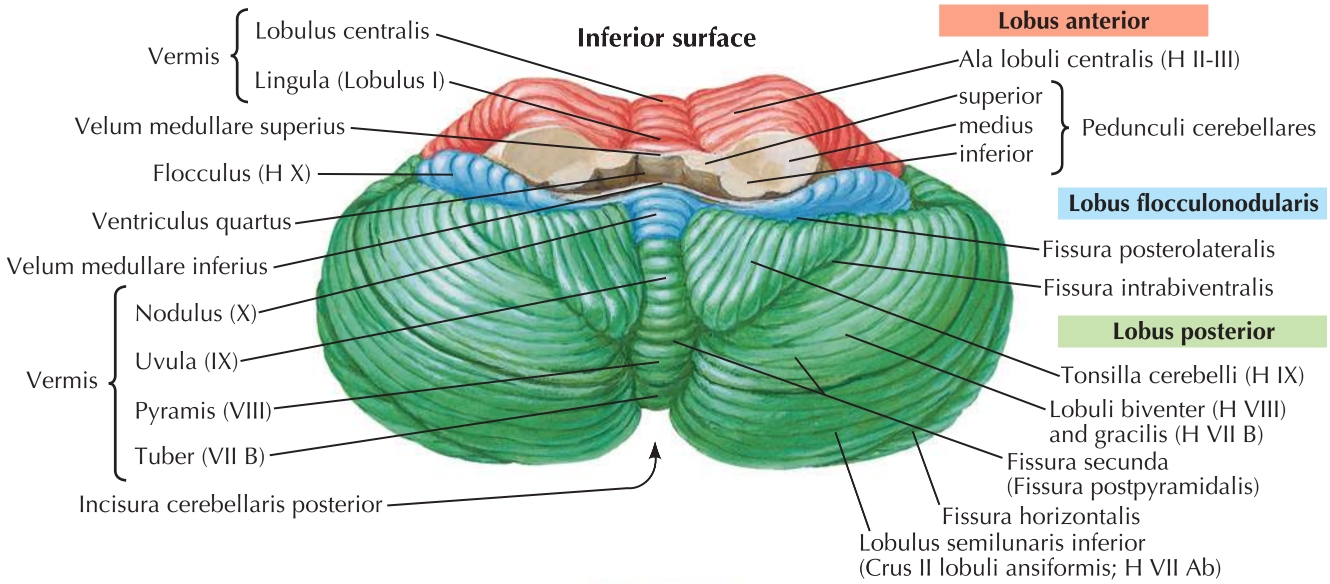

Median sagittal section

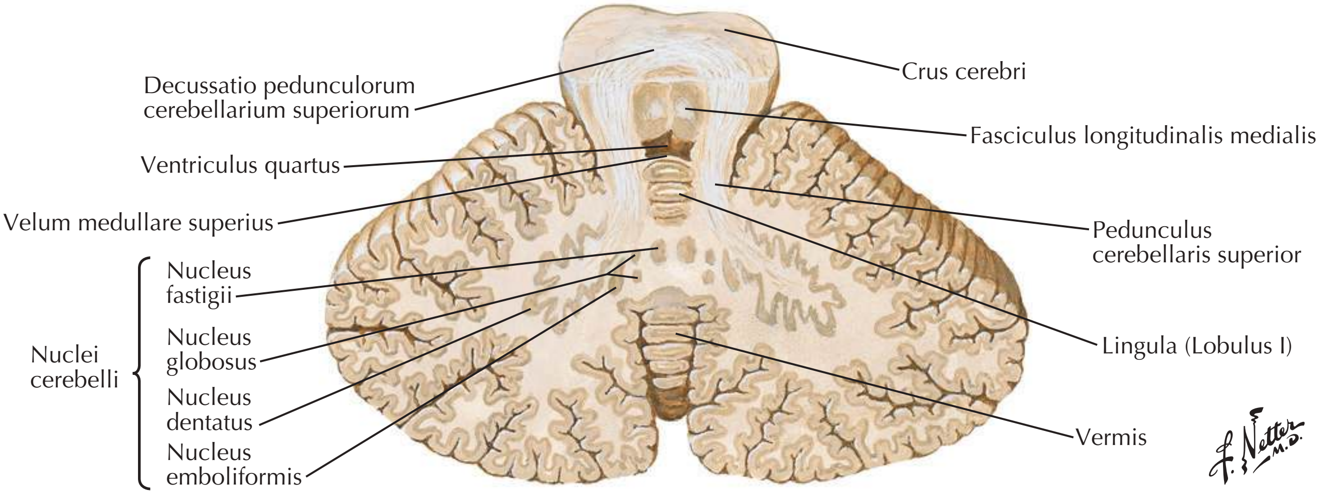
Plexus chorioideus
Adhaesio interthalamica
Commissura posterior
Commissura habenularum
Glandula pinealis
Splenium corporis callosi
V. magna cerebri (Galeni)
Corpus fornicis
Thalamus (in Ventriculus tertius)
Foramen interventriculare (Monroi)
Commissura anterior
Lamina terminalis
Sulcus hypothalamicus
Pedunculus cerebri
Aquaeductus cerebri (Sylvii)
Colliculus superior
Lamina tecti (Lamina quadrigemina)
Colliculus inferior
Pons
Fasciculus longitudinalis medialis
Ventriculus quartus
Plexus chorioideus ventriculi quarti
Medulla oblongata
Apertura mediana (Foramen Magendii)
Decussatio pyramidum
Canalis centralis medullae spinalis
Lingula (Lobulus I)
Lobulus centralis (II-III)
Culmen (IV-V)
Declive (VI)
Folium vermis (VII A)
Vermis cerebelli
Velum medullare superius
Velum medullare inferius
Tuber (VII B)
Pyramis (VIII)
Uvula (IX)
Nodulus (X)
Vermis cerebelli
Plexus chorioideus ventriculi quarti
Tonsilla cerebelli

Superior surface


Incisura cerebellaris anterior
Lobus anterior
Lobulus quadrangularis anterior (H IV-V)
Lobulus centralis (II & III)
Fissura prima
Fissura horizontalis
Culmen (IV & V)
Lobulus quadrangularis posterior (H VI)
Vermis
Decline (VI)
Lobus posterior
Fissura postlunata
Folium vermis (VII A)
Lobulus semilunaris superior (Crus I lobuli ansiformis; H VII Aa)
Fissura horizontalis
Lobulus semilunaris inferior (Crus II lobuli ansiformis; H VII Ab)
Incisura cerebellaris posterior

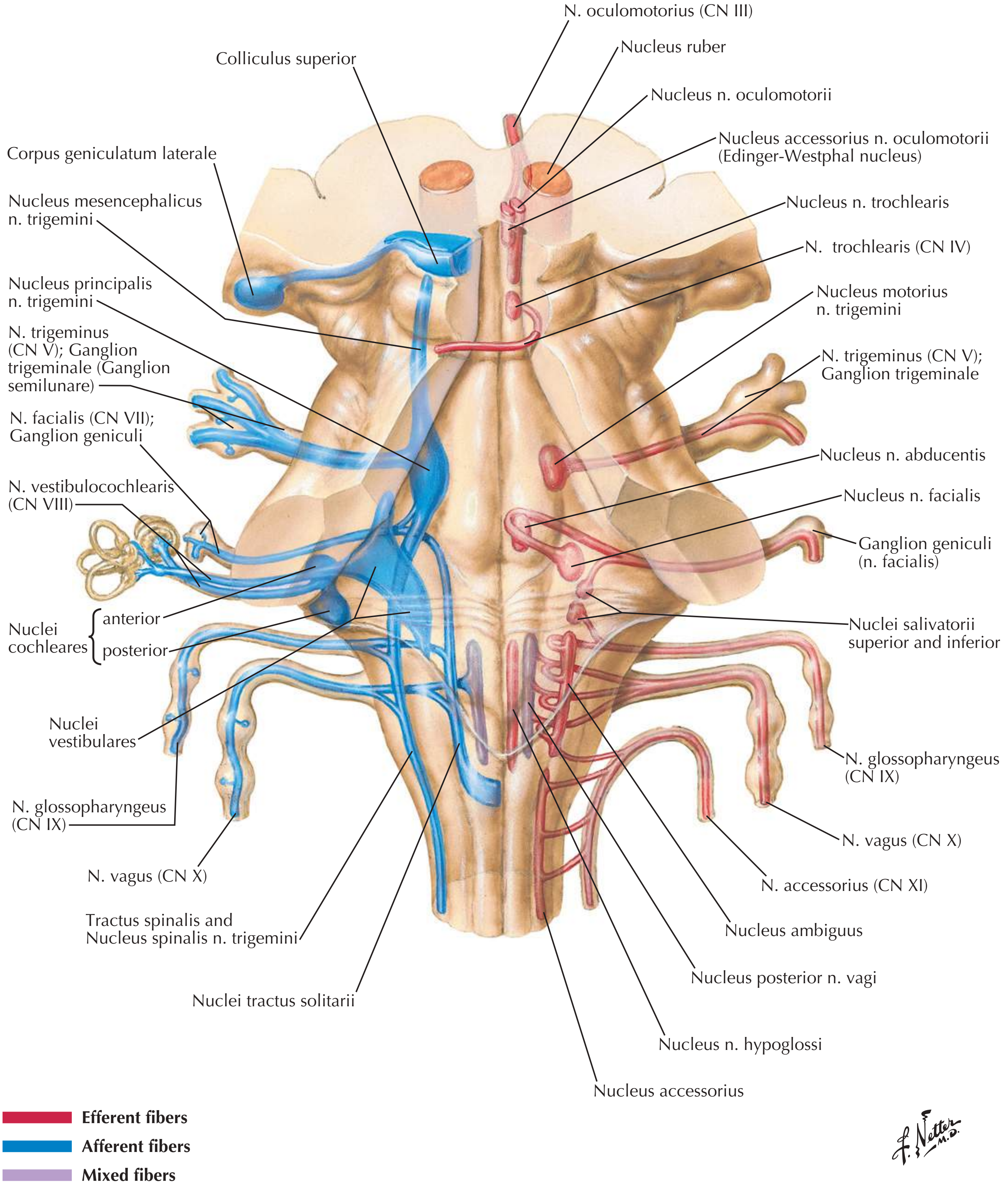
Inferior surface

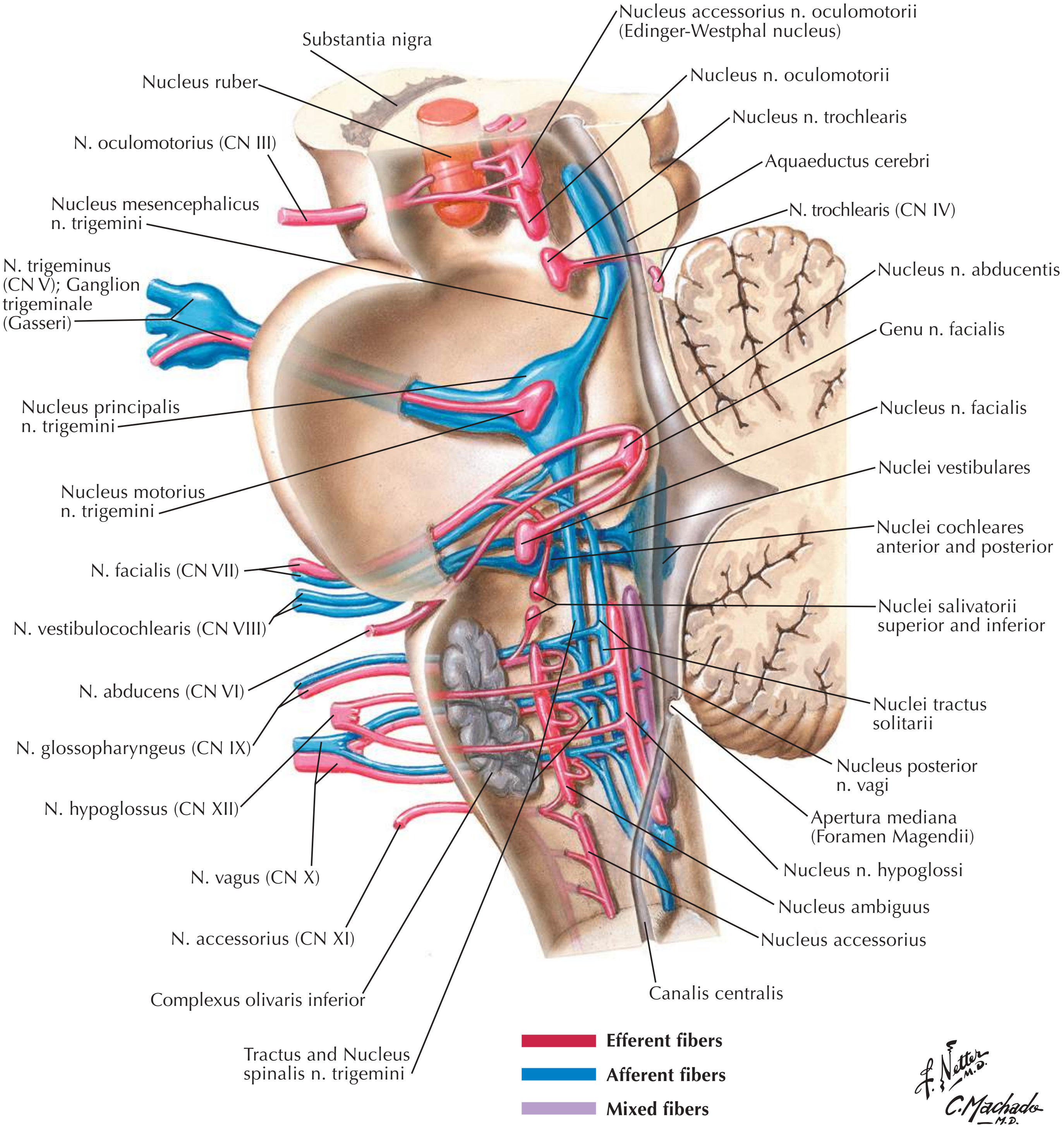

Vermis
Lobulus centralis
Lingula (Lobulus I)
Lobus anterior
Ala lobuli centralis (H II-III)
superior
medius
inferior
Pedunculi cerebellares
Velum medullare superius
Flocculus (H X)
Lobus flocculonodularis
Ventriculus quartus
Fissura posterolateralis
Velum medullare inferius
Fissura intrabiventralis
Vermis
Nodulus (X)
Lobus posterior
Uvula (IX)
Tonsilla cerebelli (H IX)
Pyramis (VIII)
Lobuli biventer (H VIII) and gracilis (H VII B)
Tuber (VII B)
Fissura secunda (Fissura postpyramidalis)
Incisura cerebellaris posterior
Fissura horizontalis
Lobulus semilunaris inferior (Crus II lobuli ansiformis; H VII Ab)


Crus cerebri
Decussatio pedunculorum cerebellarium superiorum
Fasciculus longitudinalis medialis
Ventriculus quartus
Velum medullare superius
Pedunculus cerebellaris superior
Nuclei cerebelli
Nucleus fastigii
Nucleus globosus
Nucleus dentatus
Nucleus emboliformis
Lingula (Lobulus I)
Vermis
F. Netter M.D.

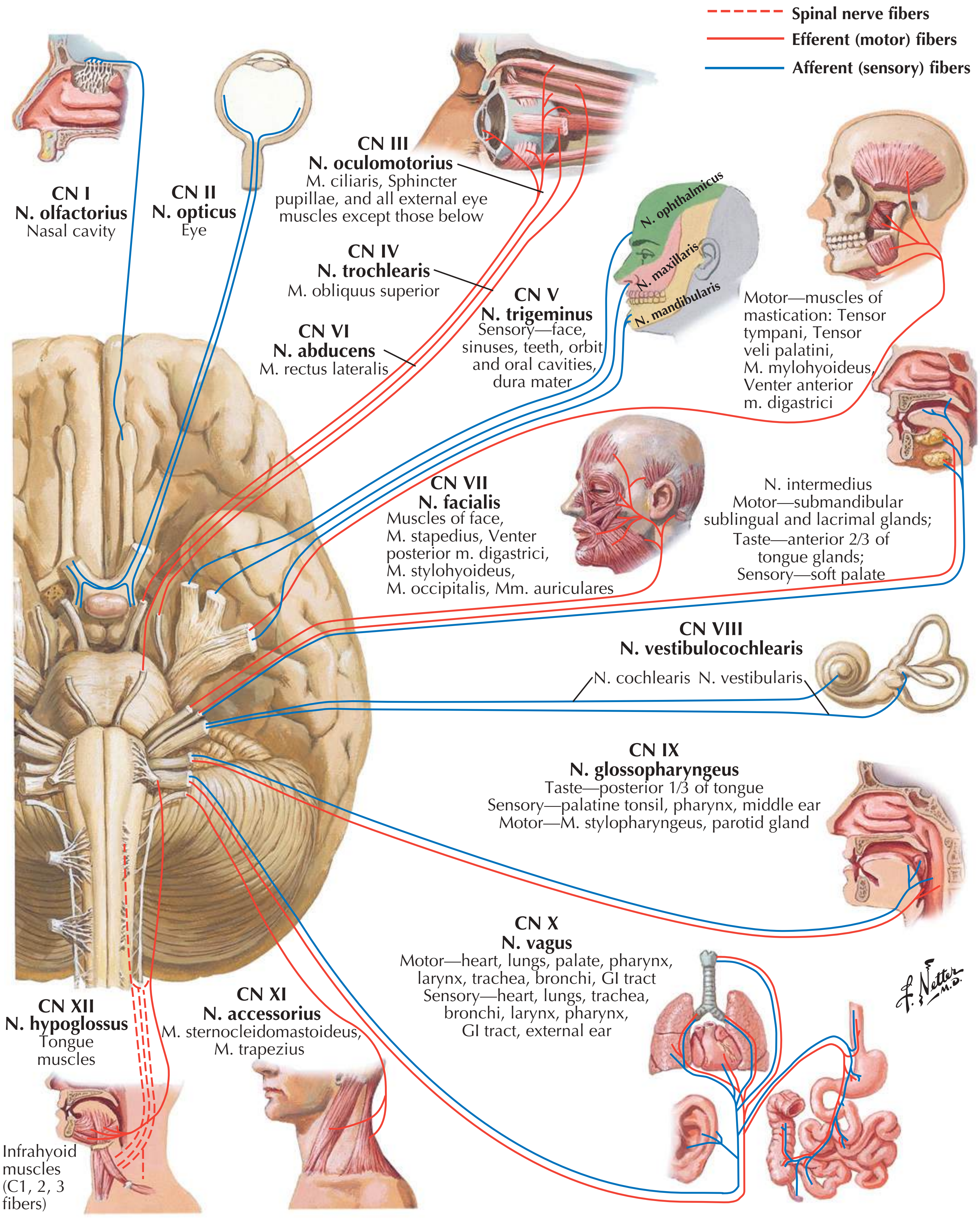
Section in plane of Pedunculus cerebellaris superior

Cranial Nerve Nuclei in Brain Stem: Schema


N. oculomotorius (CN III)
Nucleus ruber
Colliculus superior
Nucleus n. oculomotorii
Nucleus accessorius n. oculomotorii (Edinger-Westphal nucleus)
Corpus geniculatum laterale
Nucleus mesencephalicus n. trigemini
Nucleus n. trochlearis
N. trochlearis (CN IV)
Nucleus principalis n. trigemini
Nucleus motorius n. trigemini
N. trigeminus (CN V); Ganglion trigeminale (Ganglion semilunare)
N. trigeminus (CN V); Ganglion trigeminale
N. facialis (CN VII); Ganglion geniculi
Nucleus n. abducentis
N. vestibulocochlearis (CN VIII)
Nucleus n. facialis
Ganglion geniculi (n. facialis)
Nuclei cochleares
anterior
posterior
Nuclei salivatorii superior and inferior
Nuclei vestibulares
N. glossopharyngeus (CN IX)
N. glossopharyngeus (CN IX)
N. vagus (CN X)
N. vagus (CN X)
N. accessorius (CN XI)
Tractus spinalis and Nucleus spinalis n. trigemini
Nucleus ambiguus
Nucleus posterior n. vagi
Nuclei tractus solitarii
Nucleus n. hypoglossi
Nucleus accessorius
Efferent fibers
Afferent fibers
Mixed fibers

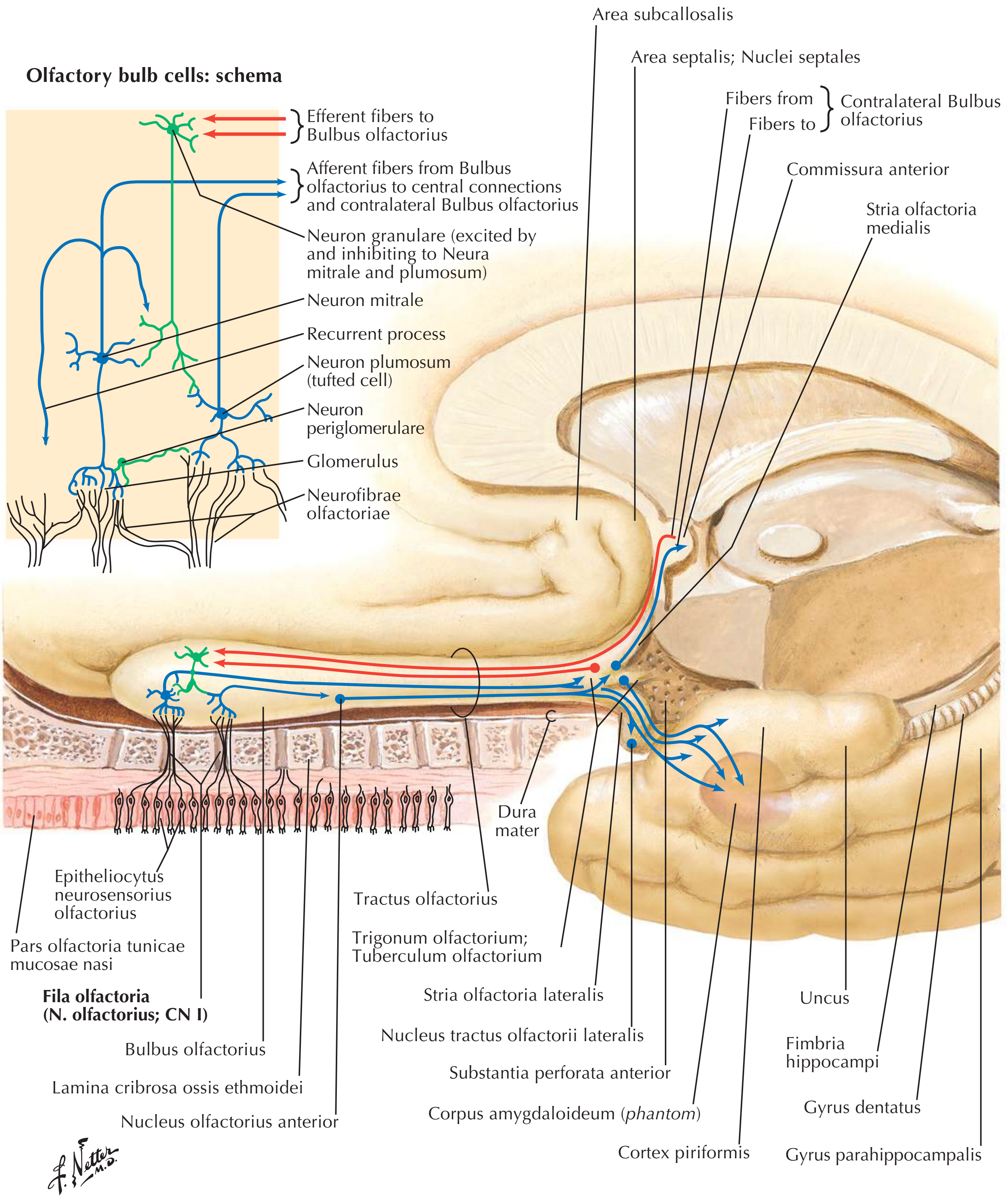

Substantia nigra
Nucleus ruber
N. oculomotorius (CN III)
Nucleus mesencephalicus n. trigemini
N. trigeminus (CN V); Ganglion trigeminale (Gasseri)
Nucleus principalis n. trigemini
Nucleus motorius n. trigemini
N. facialis (CN VII)
N. vestibulocochlearis (CN VIII)
N. abducens (CN VI)
N. glossopharyngeus (CN IX)
N. hypoglossus (CN XII)
N. vagus (CN X)
N. accessorius (CN XI)
Complexus olivaris inferior
Tractus and Nucleus spinalis n. trigemini
Nucleus accessorius n. oculomotorii (Edinger-Westphal nucleus)
Nucleus n. oculomotorii
Nucleus n. trochlearis
Aquaeductus cerebri
N. trochlearis (CN IV)
Nucleus n. abducentis
Genu n. facialis
Nucleus n. facialis
Nuclei vestibulares
Nuclei cochleares anterior and posterior
Nuclei salivatorii superior and inferior
Nuclei tractus solitarii
Nucleus posterior n. vagi
Apertura mediana (Foramen Magendii)
Nucleus n. hypoglossi
Nucleus ambiguus
Nucleus accessorius
Canalis centralis
🟥 Efferent fibers
🟦 Afferent fibers
🟪 Mixed fibers
F. Netter M.D.
C. Machado M.D.

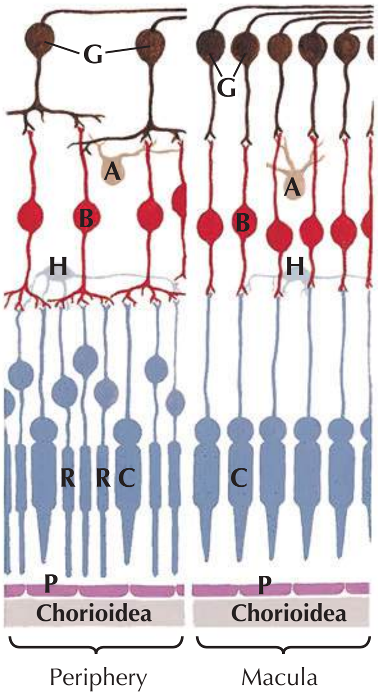
Cranial Nerves (Motor and Sensory Distribution): Schema


Spinal nerve fibers
Efferent (motor) fibers
Afferent (sensory) fibers
CN I
N. olfactorius
Nasal cavity
CN II
N. opticus
Eye
CN III
N. oculomotorius
M. ciliaris, Sphincter pupillae, and all external eye muscles except those below
CN IV
N. trochlearis
M. obliquus superior
CN VI
N. abducens
M. rectus lateralis
CN V
N. trigeminus
Sensory—face, sinuses, teeth, orbit and oral cavities, dura mater
N. ophthalmicus
N. maxillaris
N. mandibularis
Motor—muscles of mastication: Tensor tympani, Tensor veli palatini, M. mylohyoideus, Venter anterior m. digastrici
CN VII
N. facialis
Muscles of face, M. stapedius, Venter posterior m. digastrici, M. stylohyoideus, M. occipitalis, Mm. auriculares
N. intermedius
Motor—submandibular sublingual and lacrimal glands;
Taste—anterior 2/3 of tongue glands;
Sensory—soft palate
CN VIII
N. vestibulocochlearis
N. cochlearis
N. vestibularis
CN IX
N. glossopharyngeus
Taste—posterior 1/3 of tongue
Sensory—palatine tonsil, pharynx, middle ear
Motor—M. stylopharyngeus, parotid gland
CN X
N. vagus
Motor—heart, lungs, palate, pharynx, larynx, trachea, bronchi, GI tract
Sensory—heart, lungs, trachea, bronchi, larynx, pharynx, GI tract, external ear
CN XI
N. accessorius
M. sternocleidomastoideus, M. trapezius
CN XII
N. hypoglossus
Tongue muscles
Infrahyoid muscles (C1, 2, 3 fibers)
F. Netter M.D.

Olfactory Nerve (CN I): Schema

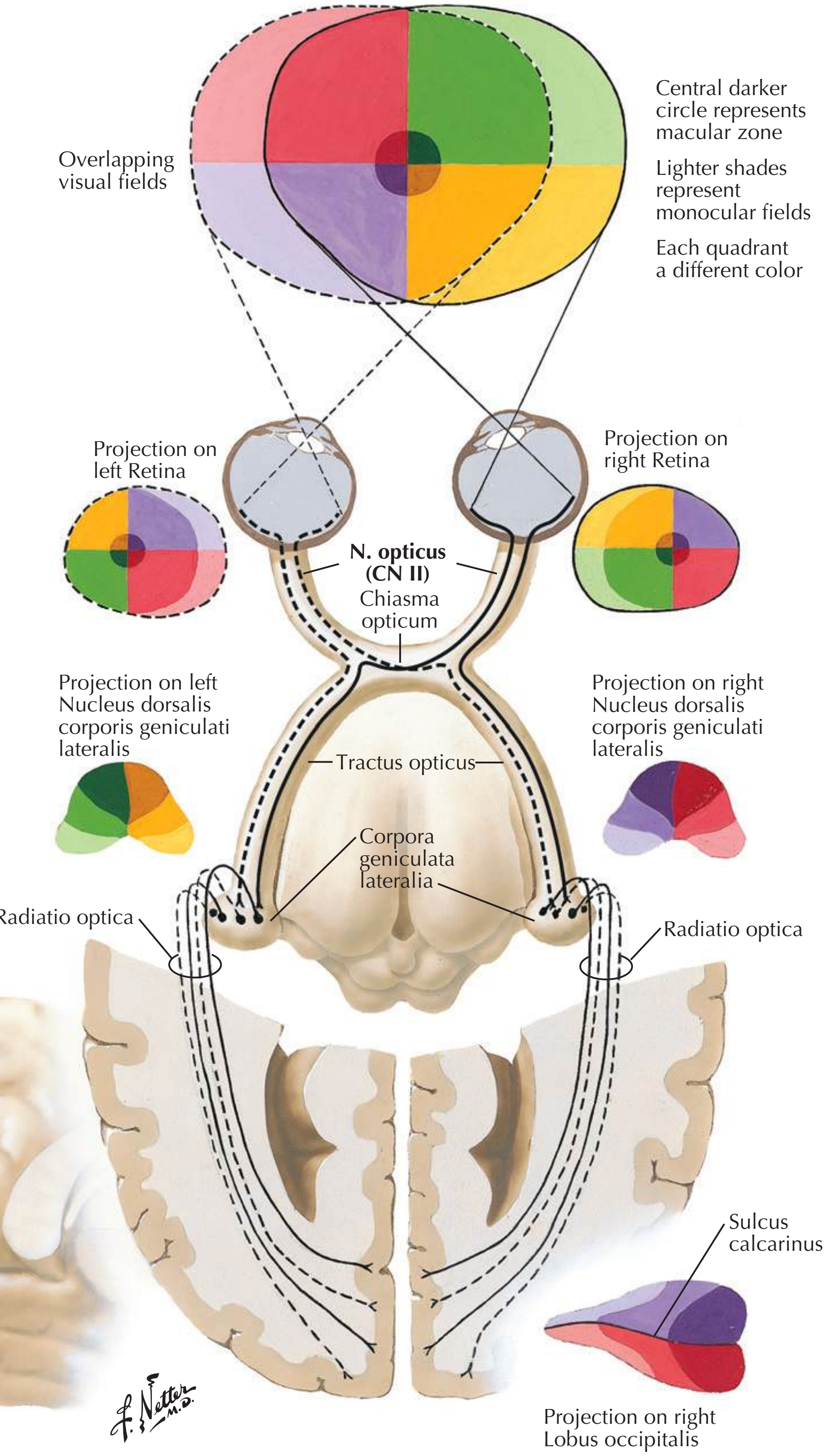
See also Plate 46

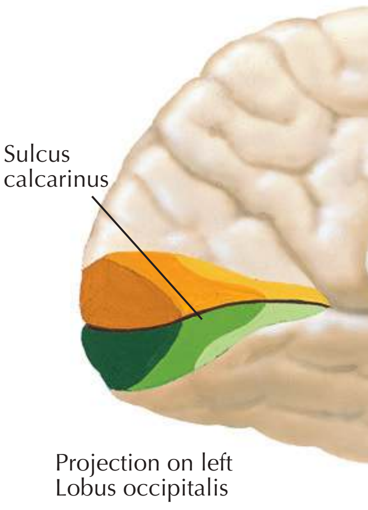

Olfactory bulb cells: schema
Efferent fibers to Bulbus olfactorius
Afferent fibers from Bulbus olfactorius to central connections and contralateral Bulbus olfactorius
Neuron granulare (excited by and inhibiting to Neura mitrale and plumosum)
Neuron mitrale
Recurrent process
Neuron plumosum (tufted cell)
Neuron periglomerulare
Glomerulus
Neurofibrae olfactoriae
Area subcallosalis
Area septalis; Nuclei septales
Fibers from
Fibers to
Contralateral Bulbus olfactorius
Commissura anterior
Stria olfactoria medialis
Dura mater
Epitheliocytus neurosensorius olfactorius
Pars olfactoria tunicae mucosae nasi
Fila olfactoria (N. olfactorius; CN I)
Bulbus olfactorius
Lamina cribrosa ossis ethmoidei
Nucleus olfactorius anterior
Tractus olfactorius
Trigonum olfactorium; Tuberculum olfactorium
Stria olfactoria lateralis
Nucleus tractus olfactorii lateralis
Substantia perforata anterior
Corpus amygdaloideum (phantom)
Cortex piriformis
Uncus
Fimbria hippocampi
Gyrus dentatus
Gyrus parahippocampalis
F. Netter M.D.


G
G
A
A
B
B
H
H
R
R
C
C
P
P
Chorioidea
Chorioidea
Periphery
Macula

Structure of retina: schema

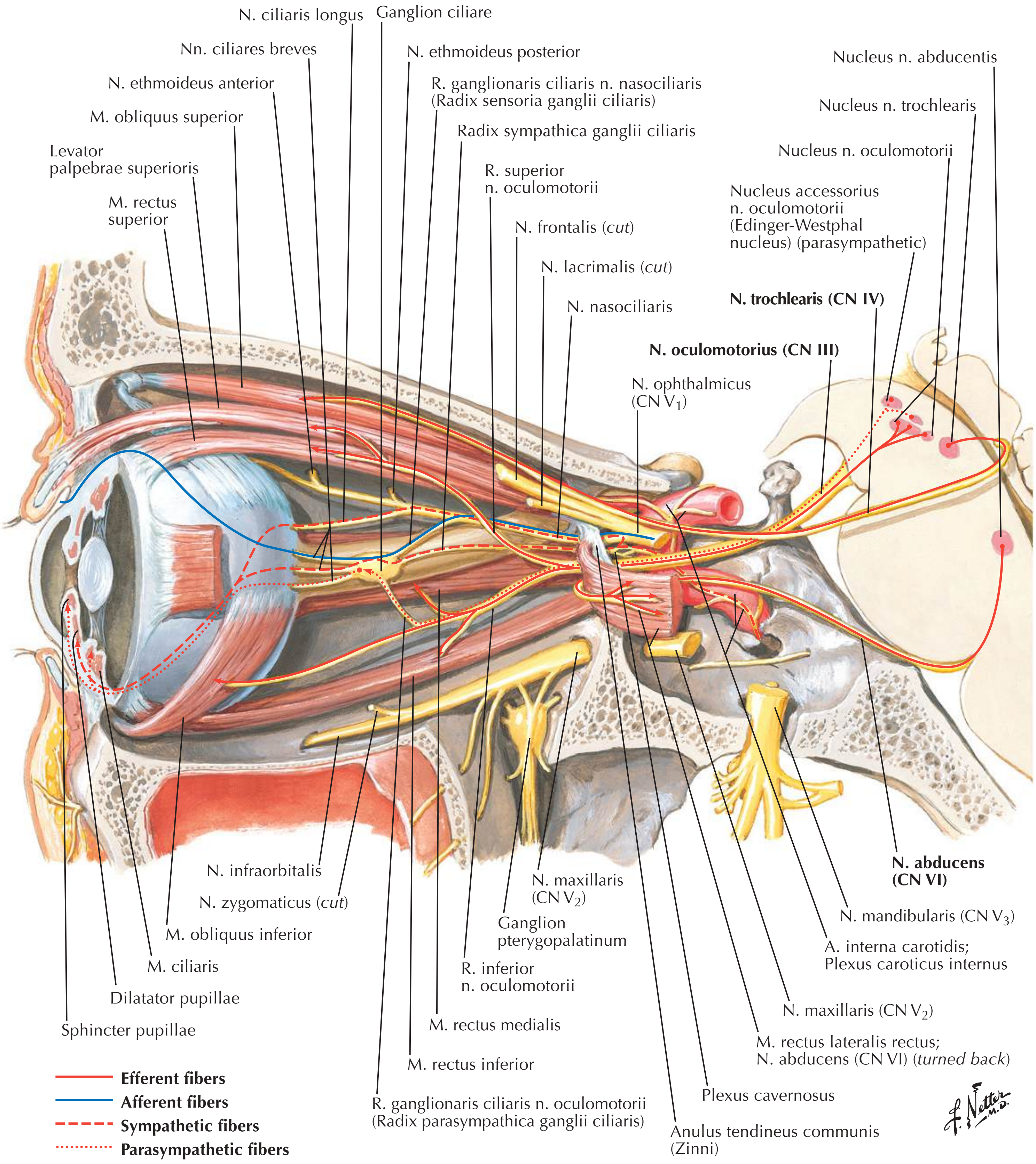
A	Neuron amacrinum
B	Neuron bipolare
C	Neuron coniferum (cone cell)
G	Neuron ganglionare
H	Neuron horizontale
P	Pigmentocytus
R	Neuron bacilliferum (rod cell)


Overlapping visual fields
Central darker circle represents macular zone
Lighter shades represent monocular fields
Each quadrant a different color
Projection on left Retina
Projection on right Retina
N. opticus (CN II)
Chiasma opticum
Projection on left Nucleus dorsalis corporis geniculati lateralis
Projection on right Nucleus dorsalis corporis geniculati lateralis
Tractus opticus
Corpora geniculata lateralia
Radiatio optica
Radiatio optica
Sulcus calcarinus
Projection on right Lobus occipitalis


Sulcus calcarinus
Projection on left Lobus occipitalis

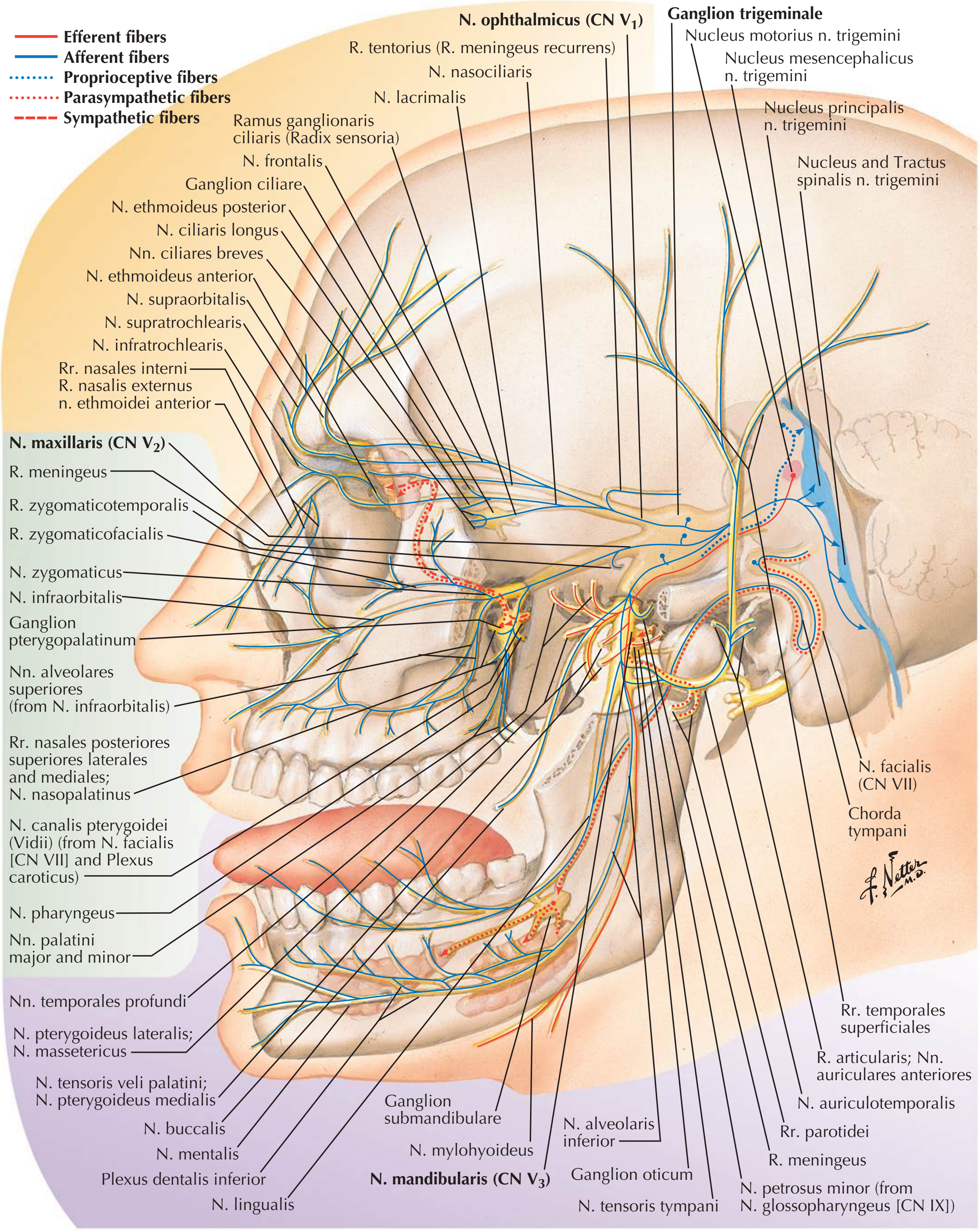
Oculomotor (CN III), Trochlear (CN IV), and Abducens (CN VI) Nerves: Schema

See also Plates 97, 143


N. ciliaris longus
Ganglion ciliare
Nn. ciliares breves
N. ethmoideus posterior
N. ethmoideus anterior
R. ganglionaris ciliaris n. nasociliaris (Radix sensoria ganglii ciliaris)
M. obliquus superior
Radix sympathica ganglii ciliaris
Levator palpebrae superioris
R. superior n. oculomotorii
M. rectus superior
N. frontalis (*cut*)
N. lacrimalis (*cut*)
N. nasociliaris
Nucleus n. abducentis
Nucleus n. trochlearis
Nucleus n. oculomotorii
Nucleus accessorius n. oculomotorii (Edinger-Westphal nucleus) (parasympathetic)
N. trochlearis (CN IV)
N. oculomotorius (CN III)
N. ophthalmicus (CN V_1)
N. infraorbitalis
N. zygomaticus (*cut*)
M. obliquus inferior
M. ciliaris
Dilatator pupillae
Sphincter pupillae
N. maxillaris (CN V_2)
Ganglion pterygopalatinum
R. inferior n. oculomotorii
M. rectus medialis
M. rectus inferior
R. ganglionaris ciliaris n. oculomotorii (Radix parasympathica ganglii ciliaris)
N. abducens (CN VI)
N. mandibularis (CN V_3)
A. interna carotidis; Plexus caroticus internus
N. maxillaris (CN V_2)
M. rectus lateralis rectus; N. abducens (CN VI) (*turned back*)
Plexus cavernosus
Anulus tendineus communis (Zinni)
Efferent fibers
Afferent fibers
Sympathetic fibers
Parasympathetic fibers
F. Netter M.D.

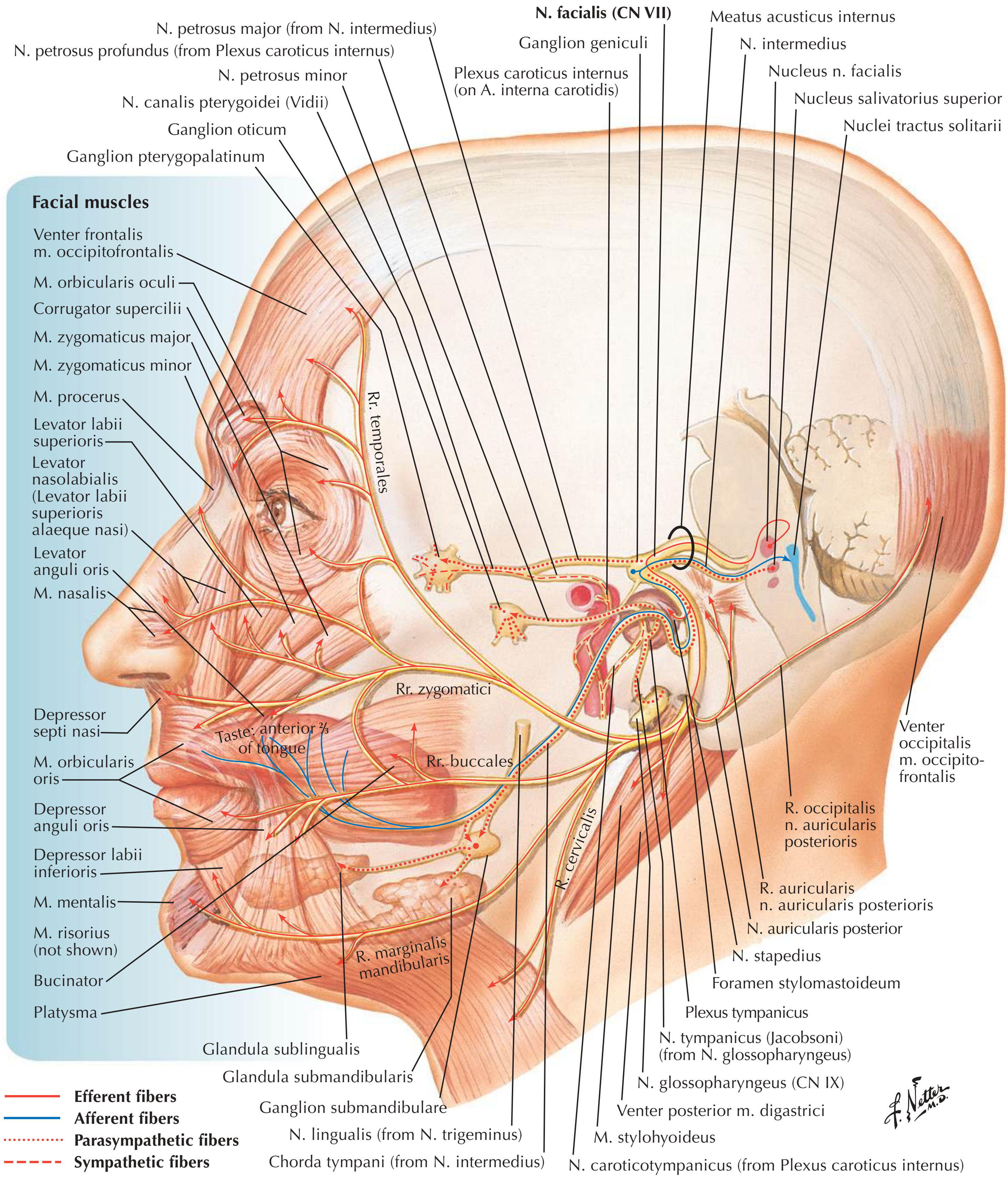
Trigeminal Nerve (CN V): Schema

See also Plates 9, 59, 61

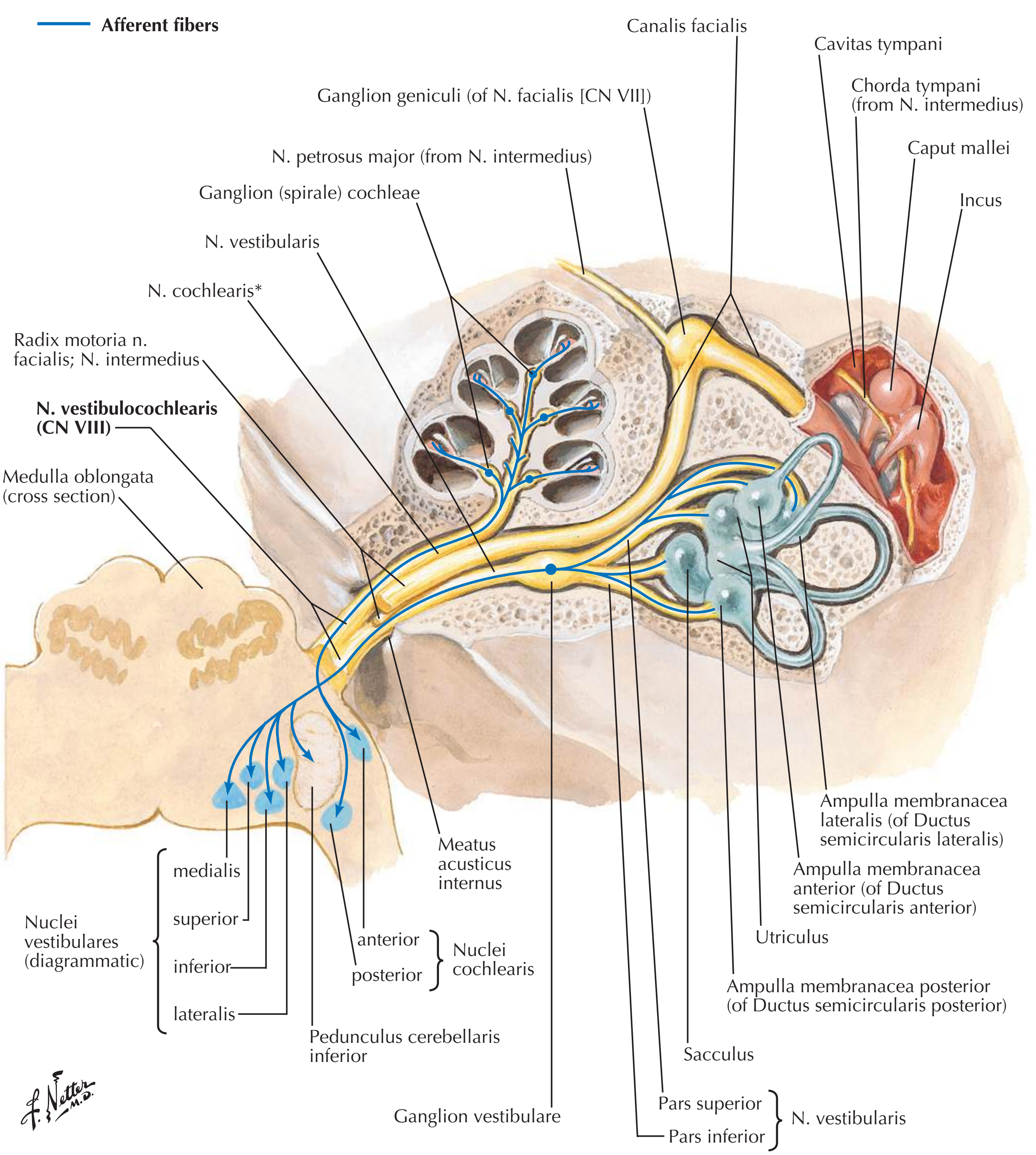

Efferent fibers
Afferent fibers
Proprioceptive fibers
Parasympathetic fibers
Sympathetic fibers
N. ophthalmicus (CN V_1)
R. tentorius (R. meningeus recurrens)
N. nasociliaris
N. lacrimalis
Ramus ganglionaris ciliaris (Radix sensoria)
N. frontalis
Ganglion ciliare
N. ethmoideus posterior
N. ciliaris longus
Nn. ciliares breves
N. ethmoideus anterior
N. supraorbitalis
N. supratrochlearis
N. infratrochlearis
Rr. nasales interni
R. nasalis externus
n. ethmoidei anterior
N. maxillaris (CN V_2)
R. meningeus
R. zygomaticotemporalis
R. zygomaticofacialis
N. zygomaticus
N. infraorbitalis
Ganglion pterygopalatinum
Nn. alveolares superiores (from N. infraorbitalis)
Rr. nasales posteriores superiores laterales and mediales; N. nasopalatinus
N. canalis pterygoidei (Vidii) (from N. facialis [CN VII] and Plexus caroticus)
N. pharyngeus
Nn. palatini major and minor
Nn. temporales profundi
N. pterygoideus lateralis; N. massetericus
N. tensoris veli palatini; N. pterygoideus medialis
N. buccalis
N. mentalis
Plexus dentalis inferior
N. lingualis
Ganglion submandibulare
N. mylohyoideus
N. mandibularis (CN V_3)
N. alveolaris inferior
Ganglion oticum
N. tensoris tympani
N. petrosus minor (from N. glossopharyngeus [CN IX])
R. meningeus
Rr. parotidei
N. auriculotemporalis
R. articularis; Nn. auriculares anteriores
Rr. temporales superficiales
Chorda tympani
N. facialis (CN VII)
Ganglion trigeminale
Nucleus motorius n. trigemini
Nucleus mesencephalicus n. trigemini
Nucleus principalis n. trigemini
Nucleus and Tractus spinalis n. trigemini
F. Netter M.D.

Facial Nerve (CN VII): Schema

See also Plate 54

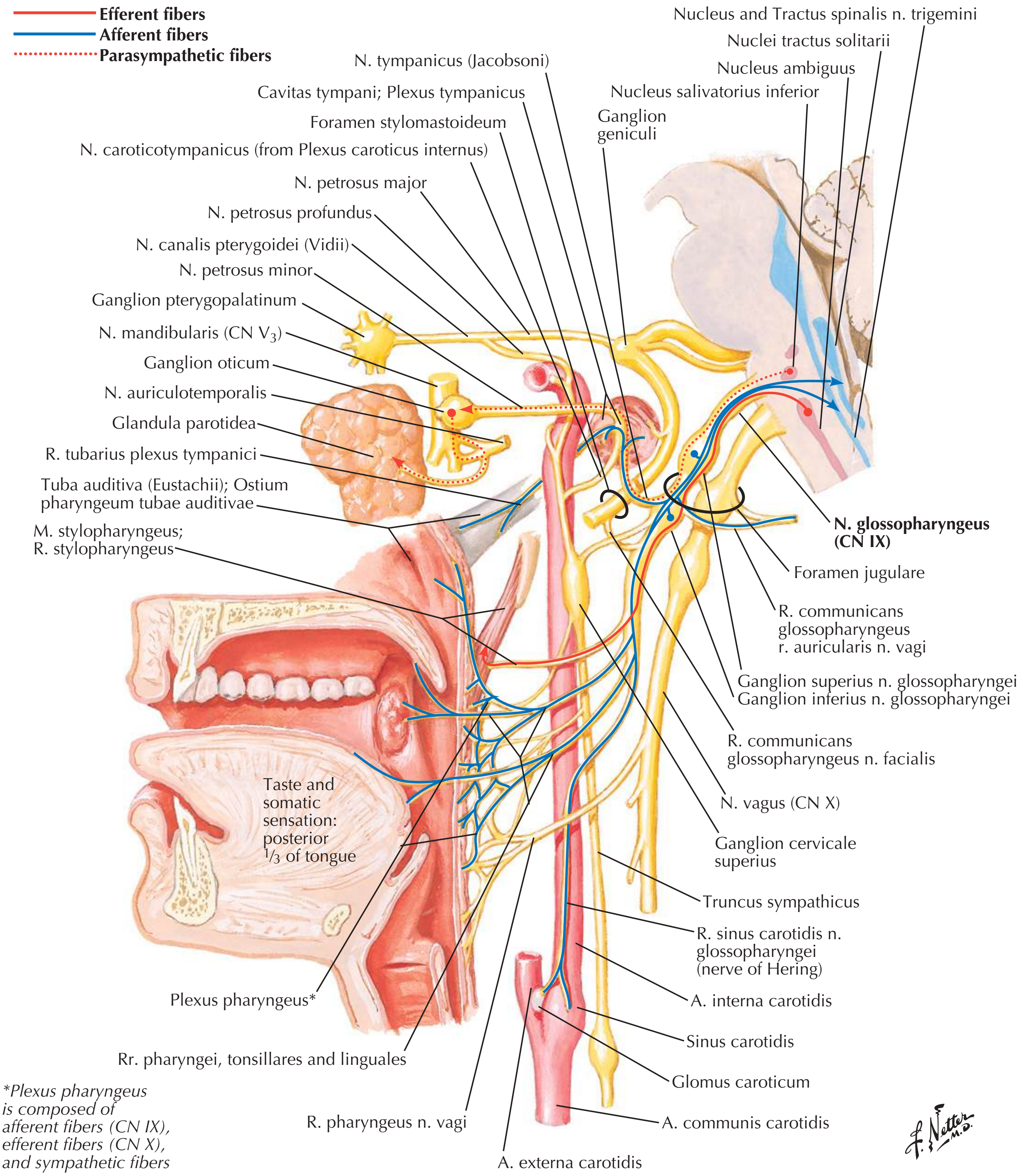

N. petrosus major (from N. intermedius)
N. petrosus profundus (from Plexus caroticus internus)
N. petrosus minor
N. canalis pterygoidei (Vidii)
Ganglion oticum
Ganglion pterygopalatinum
N. facialis (CN VII)
Ganglion geniculi
Plexus caroticus internus (on A. interna carotidis)
Meatus acusticus internus
N. intermedius
Nucleus n. facialis
Nucleus salivatorius superior
Nuclei tractus solitarii
Facial muscles
Venter frontalis m. occipitofrontalis
M. orbicularis oculi
Corrugator supercilii
M. zygomaticus major
M. zygomaticus minor
M. procerus
Levator labii superioris
Levator nasolabialis (Levator labii superioris alaeque nasi)
Levator anguli oris
M. nasalis
Depressor septi nasi
M. orbicularis oris
Depressor anguli oris
Depressor labii inferioris
M. mentalis
M. risorius (not shown)
Bucinator
Platysma
Rr. temporales
Rr. zygomatici
Taste: anterior ⅔ of tongue
Rr. buccales
R. cervicalis
R. marginalis mandibularis
Venter occipitalis m. occipito-frontalis
R. occipitalis n. auricularis posterioris
R. auricularis n. auricularis posterioris
N. auricularis posterior
N. stapedius
Foramen stylomastoideum
Plexus tympanicus
N. tympanicus (Jacobsoni) (from N. glossopharyngeus)
N. glossopharyngeus (CN IX)
Venter posterior m. digastrici
M. stylohyoideus
N. caroticotympanicus (from Plexus caroticus internus)
Glandula sublingualis
Glandula submandibularis
Ganglion submandibulare
N. lingualis (from N. trigeminus)
Chorda tympani (from N. intermedius)
—— Efferent fibers
—— Afferent fibers
……… Parasympathetic fibers
– – – Sympathetic fibers
F. Netter M.D.

Vestibulocochlear Nerve (CN VIII): Schema


Afferent fibers
Canalis facialis
Cavitas tympani
Chorda tympani (from N. intermedius)
Ganglion geniculi (of N. facialis [CN VII])
Caput mallei
N. petrosus major (from N. intermedius)
Incus
Ganglion (spirale) cochleae
N. vestibularis
N. cochlearis*
Radix motoria n. facialis; N. intermedius
N. vestibulocochlearis (CN VIII)
Medulla oblongata (cross section)
Ampulla membranacea lateralis (of Ductus semicircularis lateralis)
Meatus acusticus internus
Ampulla membranacea anterior (of Ductus semicircularis anterior)
Nuclei vestibulares (diagrammatic)
medialis
superior
inferior
lateralis
anterior
posterior
Nuclei cochlearis
Utriculus
Ampulla membranacea posterior (of Ductus semicircularis posterior)
Pedunculus cerebellaris inferior
Sacculus
Ganglion vestibulare
Pars superior
Pars inferior
N. vestibularis

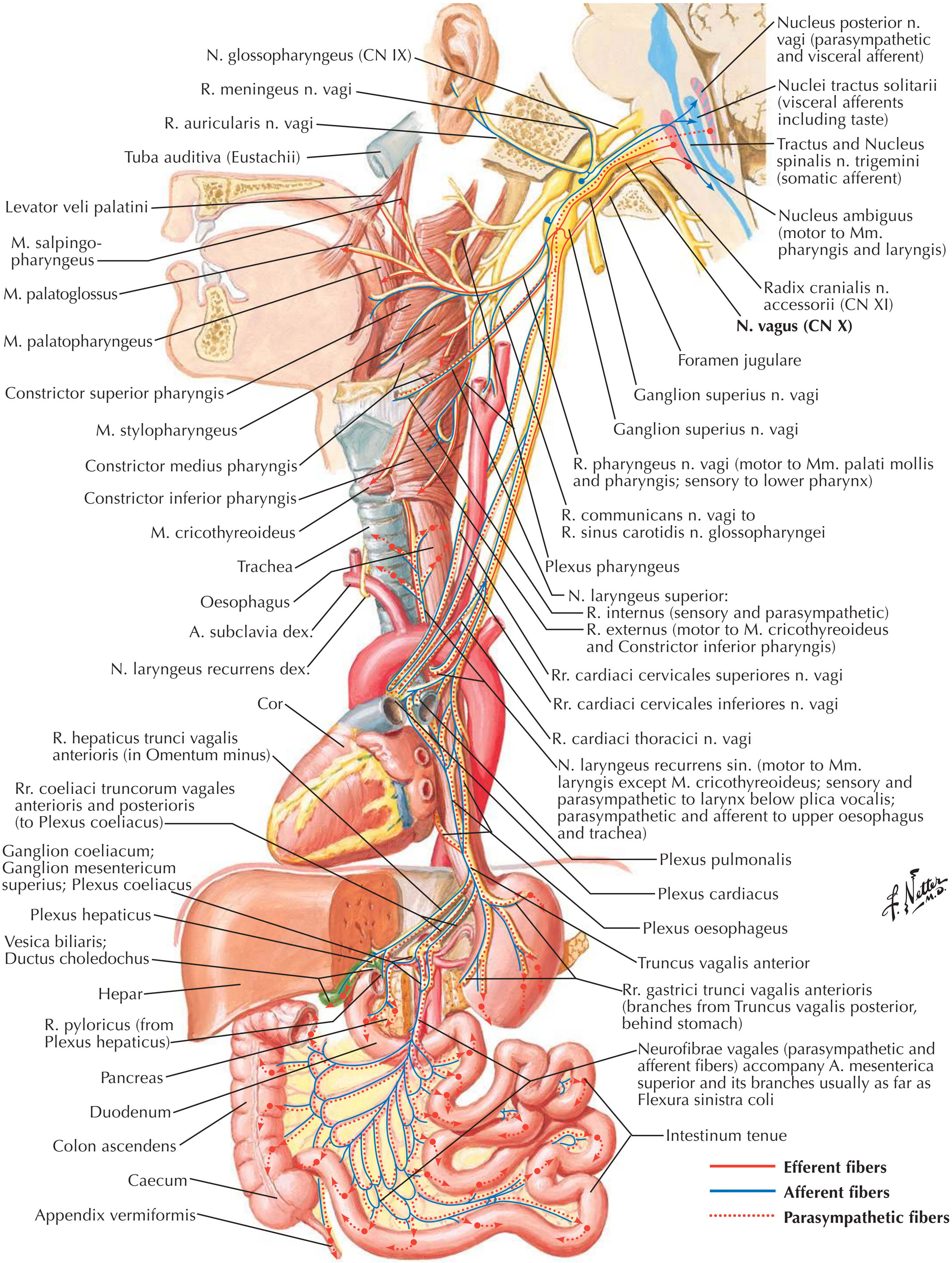
Note: N. cochlearis also contains efferent fibers to the sensory epithelium. These fibers are derived from the n. vestibularis while in the meatus acusticus internus.

Glossopharyngeal Nerve (CN IX): Schema


Efferent fibers
Afferent fibers
Parasympathetic fibers
N. tympanicus (Jacobsoni)
Cavitas tympani; Plexus tympanicus
Foramen stylomastoideum
N. caroticotympanicus (from Plexus caroticus internus)
N. petrosus major
N. petrosus profundus
N. canalis pterygoidei (Vidii)
N. petrosus minor
Ganglion pterygopalatinum
N. mandibularis (CN V_3)
Ganglion oticum
N. auriculotemporalis
Glandula parotidea
R. tubarius plexus tympanici
Tuba auditiva (Eustachii); Ostium pharyngeum tubae auditivae
M. stylopharyngeus; R. stylopharyngeus
Taste and somatic sensation: posterior 1/3 of tongue
Plexus pharyngeus*
Rr. pharyngei, tonsillares and linguales
R. pharyngeus n. vagi
A. externa carotidis
Nucleus and Tractus spinalis n. trigemini
Nuclei tractus solitarii
Nucleus ambiguus
Nucleus salivatorius inferior
Ganglion geniculi
N. glossopharyngeus (CN IX)
Foramen jugulare
R. communicans glossopharyngeus r. auricularis n. vagi
Ganglion superius n. glossopharyngei
Ganglion inferius n. glossopharyngei
R. communicans glossopharyngeus n. facialis
N. vagus (CN X)
Ganglion cervicale superius
Truncus sympathicus
R. sinus carotidis n. glossopharyngei (nerve of Hering)
A. interna carotidis
Sinus carotidis
Glomus caroticum
A. communis carotidis

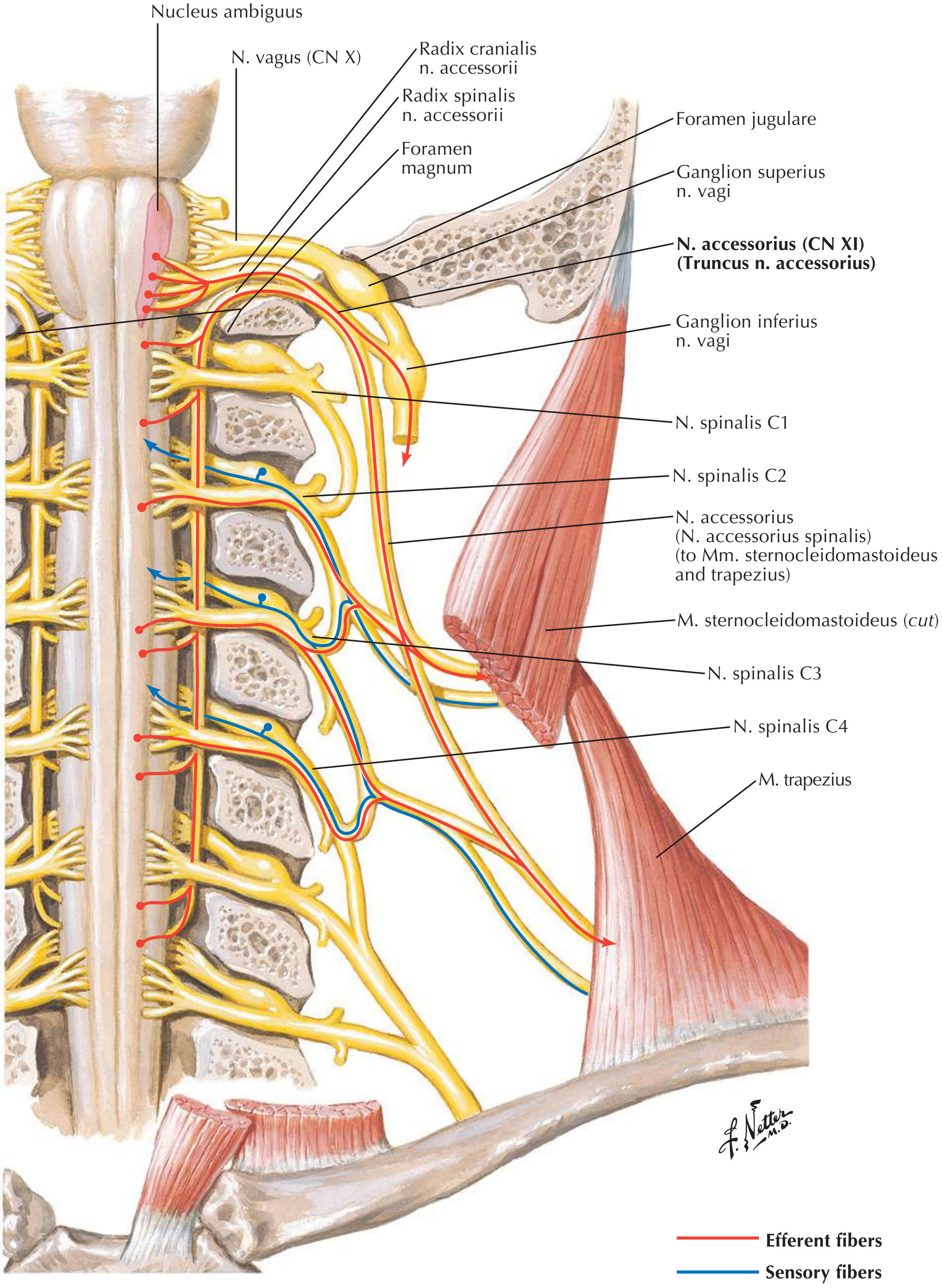
**Plexus pharyngeus is composed of afferent fibers (CN IX), efferent fibers (CN X), and sympathetic fibers*

Vagus Nerve (CN X): Schema


N. glossopharyngeus (CN IX)
R. meningeus n. vagi
R. auricularis n. vagi
Tuba auditiva (Eustachii)
Levator veli palatini
M. salpingo-pharyngeus
M. palatoglossus
M. palatopharyngeus
Constrictor superior pharyngis
M. stylopharyngeus
Constrictor medius pharyngis
Constrictor inferior pharyngis
M. cricothyreoideus
Trachea
Oesophagus
A. subclavia dex.
N. laryngeus recurrens dex.
Cor
R. hepaticus trunci vagalis anterioris (in Omentum minus)
Rr. coeliaci truncorum vagales anterioris and posterioris (to Plexus coeliacus)
Ganglion coeliacum; Ganglion mesentericum superius; Plexus coeliacus
Plexus hepaticus
Vesica biliaris; Ductus choledochus
Hepar
R. pyloricus (from Plexus hepaticus)
Pancreas
Duodenum
Colon ascendens
Caecum
Appendix vermiformis
Nucleus posterior n. vagi (parasympathetic and visceral afferent)
Nuclei tractus solitarii (visceral afferents including taste)
Tractus and Nucleus spinalis n. trigemini (somatic afferent)
Nucleus ambiguus (motor to Mm. pharyngis and laryngis)
Radix cranialis n. accessorii (CN XI)
N. vagus (CN X)
Foramen jugulare
Ganglion superius n. vagi
Ganglion superius n. vagi
R. pharyngeus n. vagi (motor to Mm. palati mollis and pharyngis; sensory to lower pharynx)
R. communicans n. vagi to R. sinus carotidis n. glossopharyngei
Plexus pharyngeus
N. laryngeus superior:
R. internus (sensory and parasympathetic)
R. externus (motor to M. cricothyreoideus and Constrictor inferior pharyngis)
Rr. cardiaci cervicales superiores n. vagi
Rr. cardiaci cervicales inferiores n. vagi
R. cardiaci thoracici n. vagi
N. laryngeus recurrens sin. (motor to Mm. laryngis except M. cricothyreoideus; sensory and parasympathetic to larynx below plica vocalis; parasympathetic and afferent to upper oesophagus and trachea)
Plexus pulmonalis
Plexus cardiacus
Plexus oesophageus
Truncus vagalis anterior
Rr. gastrici trunci vagalis anterioris (branches from Truncus vagalis posterior, behind stomach)
Neurofibrae vagales (parasympathetic and afferent fibers) accompany A. mesenterica superior and its branches usually as far as Flexura sinistra coli
Intestinum tenue
Efferent fibers
Afferent fibers
Parasympathetic fibers
F. Netter M.D.

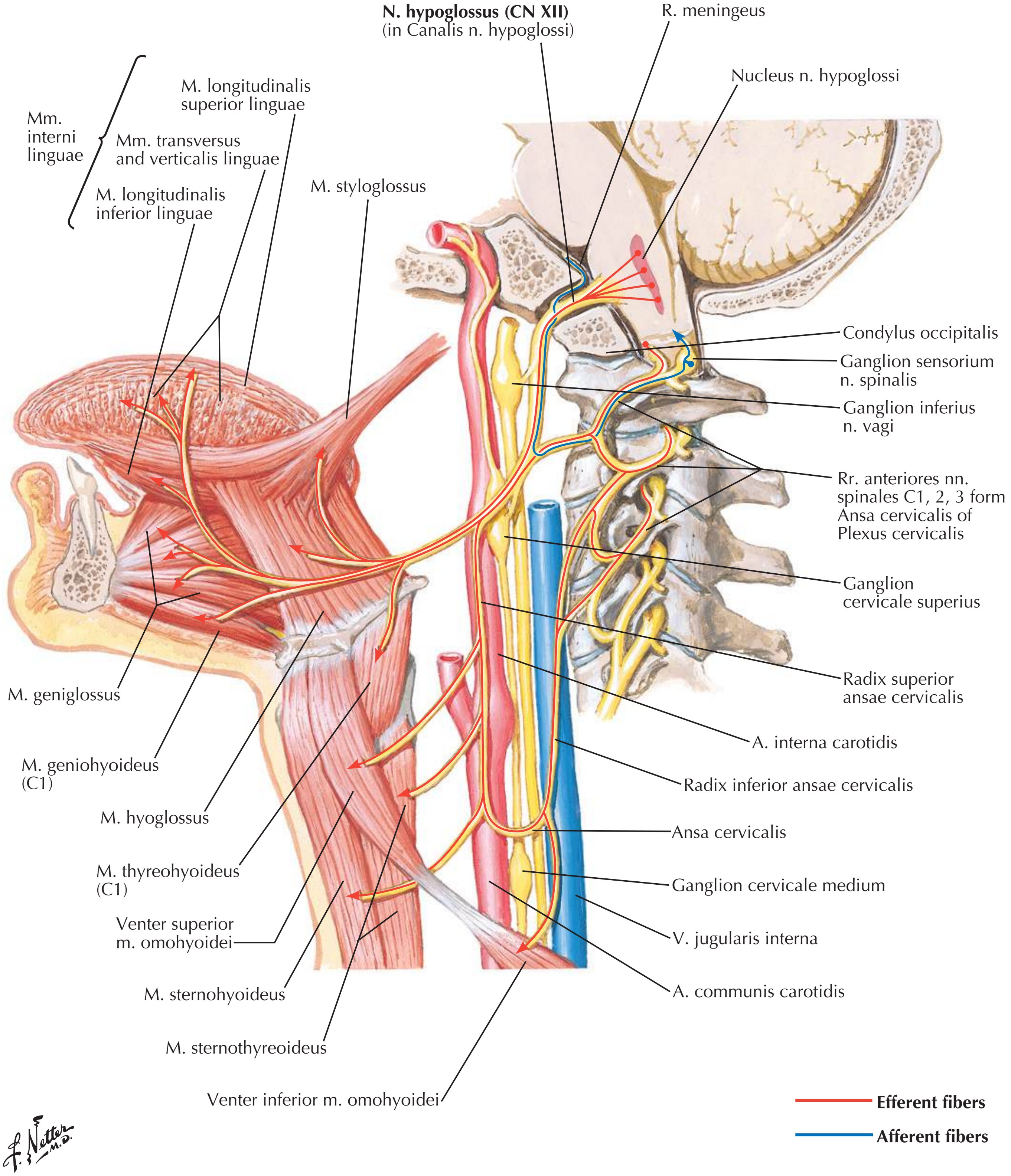
Accessory Nerve (CN XI): Schema

See also Plate 39


Nucleus ambiguus
N. vagus (CN X)
Radix cranialis n. accessorii
Radix spinalis n. accessorii
Foramen magnum
Foramen jugulare
Ganglion superius n. vagi
N. accessorius (CN XI) (Truncus n. accessorius)
Ganglion inferius n. vagi
N. spinalis C1
N. spinalis C2
N. accessorius (N. accessorius spinalis) (to Mm. sternocleidomastoideus and trapezius)
M. sternocleidomastoideus (*cut*)
N. spinalis C3
N. spinalis C4
M. trapezius
F. Netter M.D.
Efferent fibers
Sensory fibers

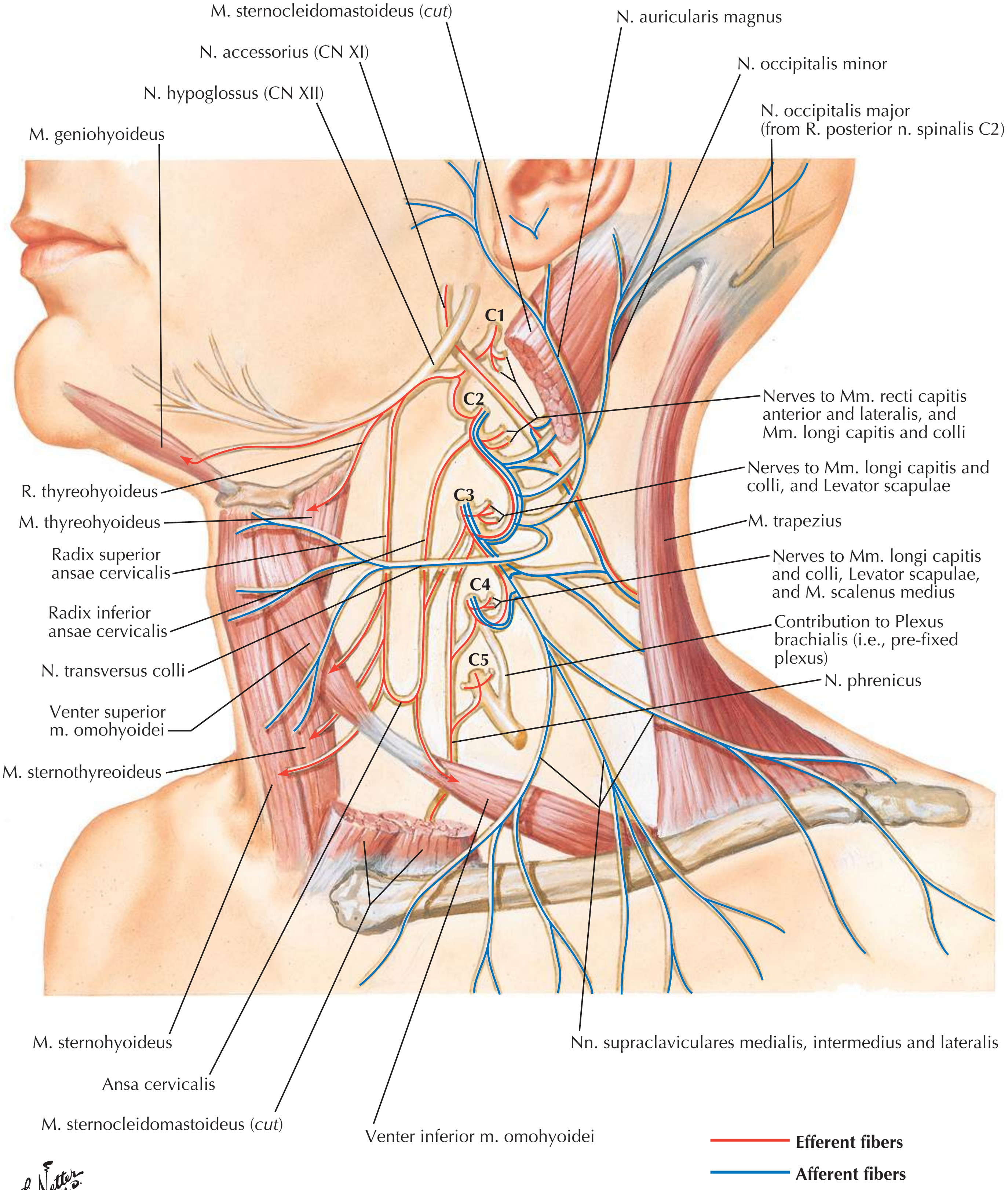
Hypoglossal Nerve (CN XII): Schema

See also **Plate 39**


N. hypoglossus (CN XII)
(in Canalis n. hypoglossi)
R. meningeus
Nucleus n. hypoglossi
Mm. interni linguae
M. longitudinalis superior linguae
Mm. transversus and verticalis linguae
M. longitudinalis inferior linguae
M. styloglossus
Condylus occipitalis
Ganglion sensorium n. spinalis
Ganglion inferius n. vagi
Rr. anteriores nn. spinales C1, 2, 3 form Ansa cervicalis of Plexus cervicalis
Ganglion cervicale superius
Radix superior ansae cervicalis
A. interna carotidis
Radix inferior ansae cervicalis
Ansa cervicalis
Ganglion cervicale medium
V. jugularis interna
A. communis carotidis
M. geniglossus
M. geniohyoideus (C1)
M. hyoglossus
M. thyreohyoideus (C1)
Venter superior m. omohyoidei
M. sternohyoideus
M. sternothyreoideus
Venter inferior m. omohyoidei
Efferent fibers
Afferent fibers

Cervical Plexus: Schema

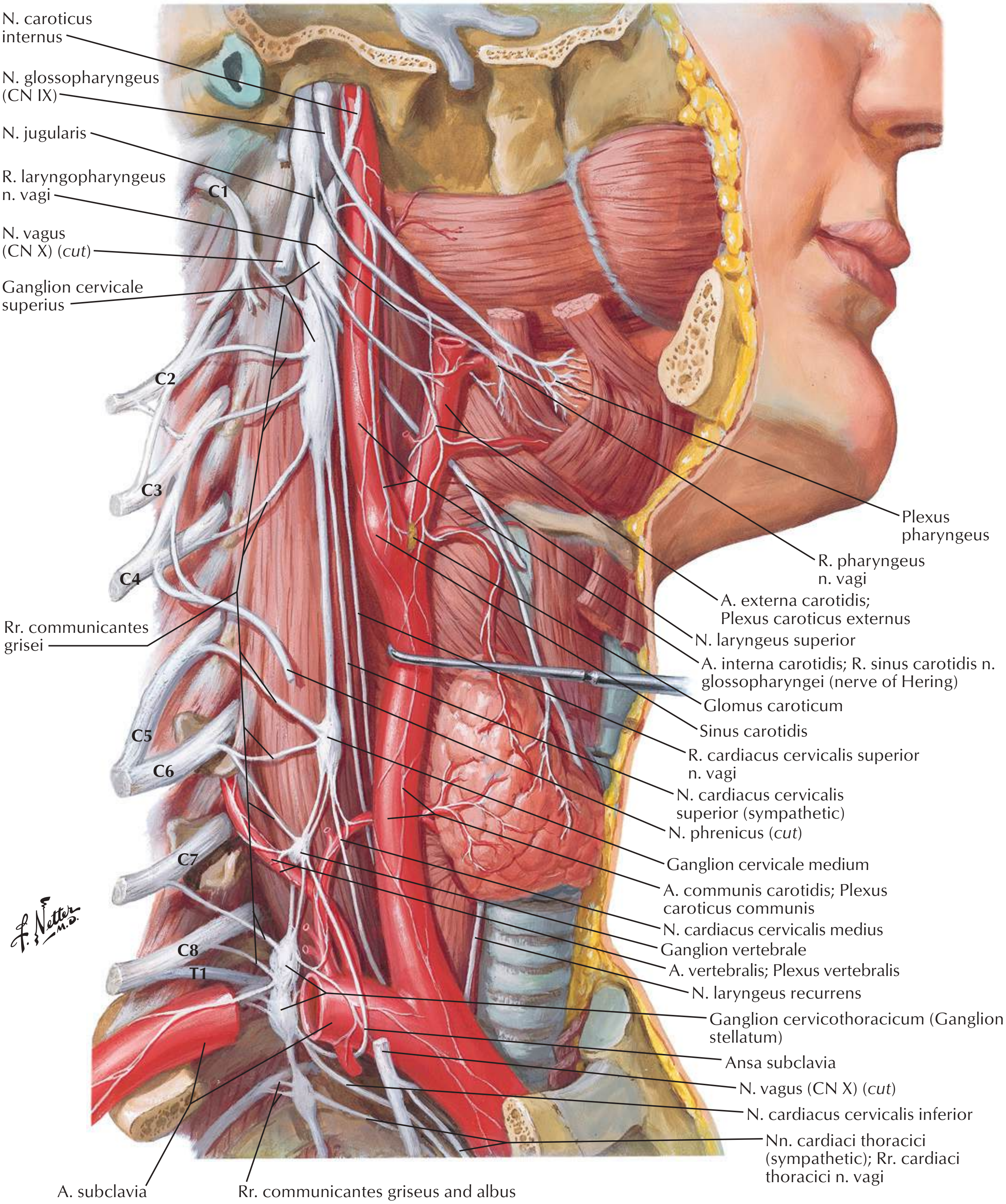
See also Plates 39, 40


M. sternocleidomastoideus (*cut*)
N. accessorius (CN XI)
N. hypoglossus (CN XII)
M. geniohyoideus
N. auricularis magnus
N. occipitalis minor
N. occipitalis major (from R. posterior n. spinalis C2)
C1
C2
C3
C4
C5
Nerves to Mm. recti capitis anterior and lateralis, and Mm. longi capitis and colli
Nerves to Mm. longi capitis and colli, and Levator scapulae
M. trapezius
Nerves to Mm. longi capitis and colli, Levator scapulae, and M. scalenus medius
Contribution to Plexus brachialis (i.e., pre-fixed plexus)
N. phrenicus
R. thyreohyoideus
M. thyreohyoideus
Radix superior ansae cervicalis
Radix inferior ansae cervicalis
N. transversus colli
Venter superior m. omohyoidei
M. sternothyreoideus
M. sternohyoideus
Ansa cervicalis
M. sternocleidomastoideus (*cut*)
Venter inferior m. omohyoidei
Nn. supraclaviculares medialis, intermedius and lateralis
Efferent fibers
Afferent fibers

F. Netter M.D.

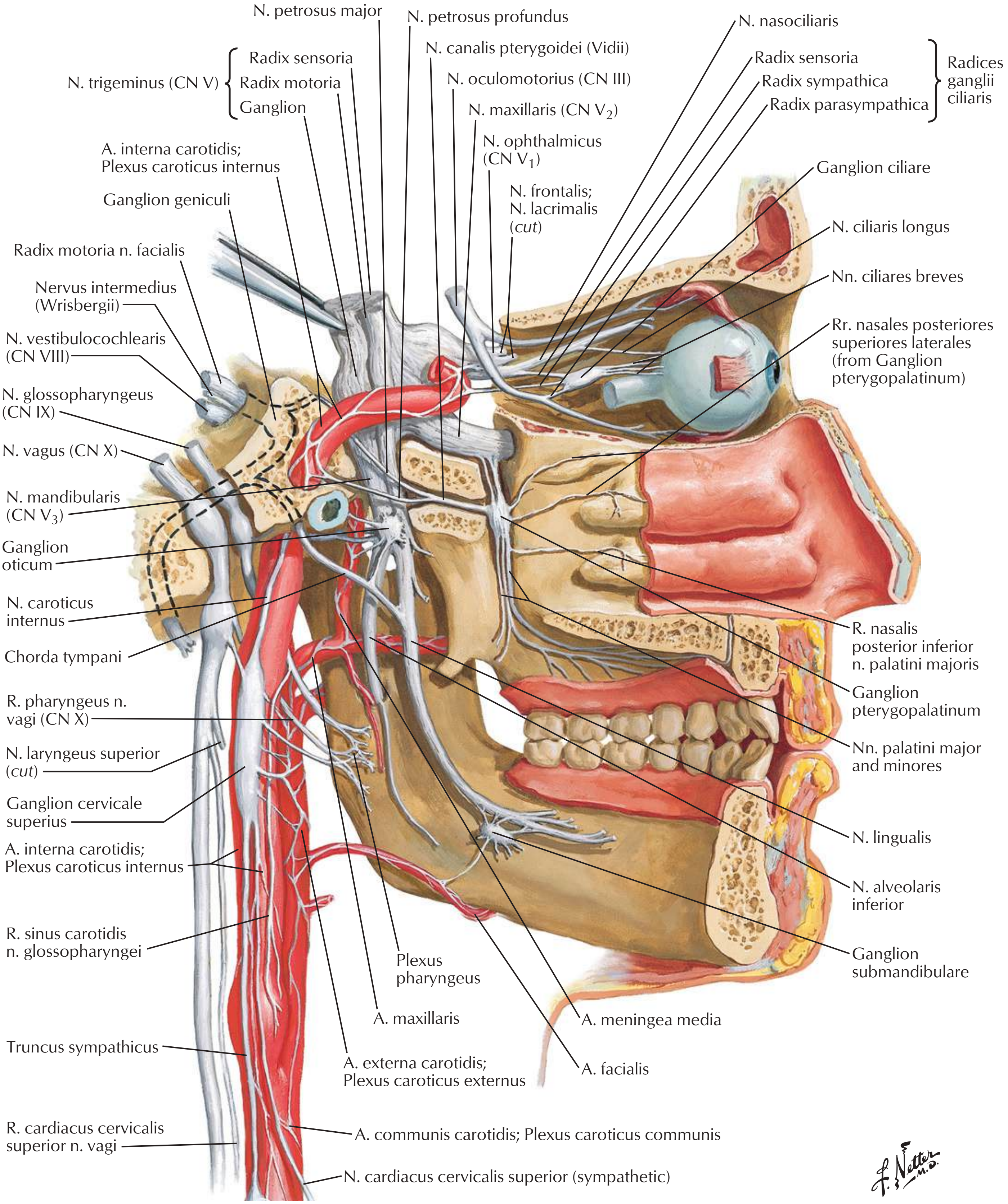
Autonomic Nerves in Neck

See also Plate 136


N. caroticus internus
N. glossopharyngeus (CN IX)
N. jugularis
R. laryngopharyngeus n. vagi
N. vagus (CN X) (*cut*)
Ganglion cervicale superius
C1
C2
C3
C4
Rr. communicantes grisei
C5
C6
C7
C8
T1
A. subclavia
Rr. communicantes griseus and albus
Plexus pharyngeus
R. pharyngeus n. vagi
A. externa carotidis; Plexus caroticus externus
N. laryngeus superior
A. interna carotidis; R. sinus carotidis n. glossopharyngei (nerve of Hering)
Glomus caroticum
Sinus carotidis
R. cardiacus cervicalis superior n. vagi
N. cardiacus cervicalis superior (sympathetic)
N. phrenicus (*cut*)
Ganglion cervicale medium
A. communis carotidis; Plexus caroticus communis
N. cardiacus cervicalis medius
Ganglion vertebrale
A. vertebralis; Plexus vertebralis
N. laryngeus recurrens
Ganglion cervicothoracicum (Ganglion stellatum)
Ansa subclavia
N. vagus (CN X) (*cut*)
N. cardiacus cervicalis inferior
Nn. cardiaci thoracici (sympathetic); Rr. cardiaci thoracici n. vagi

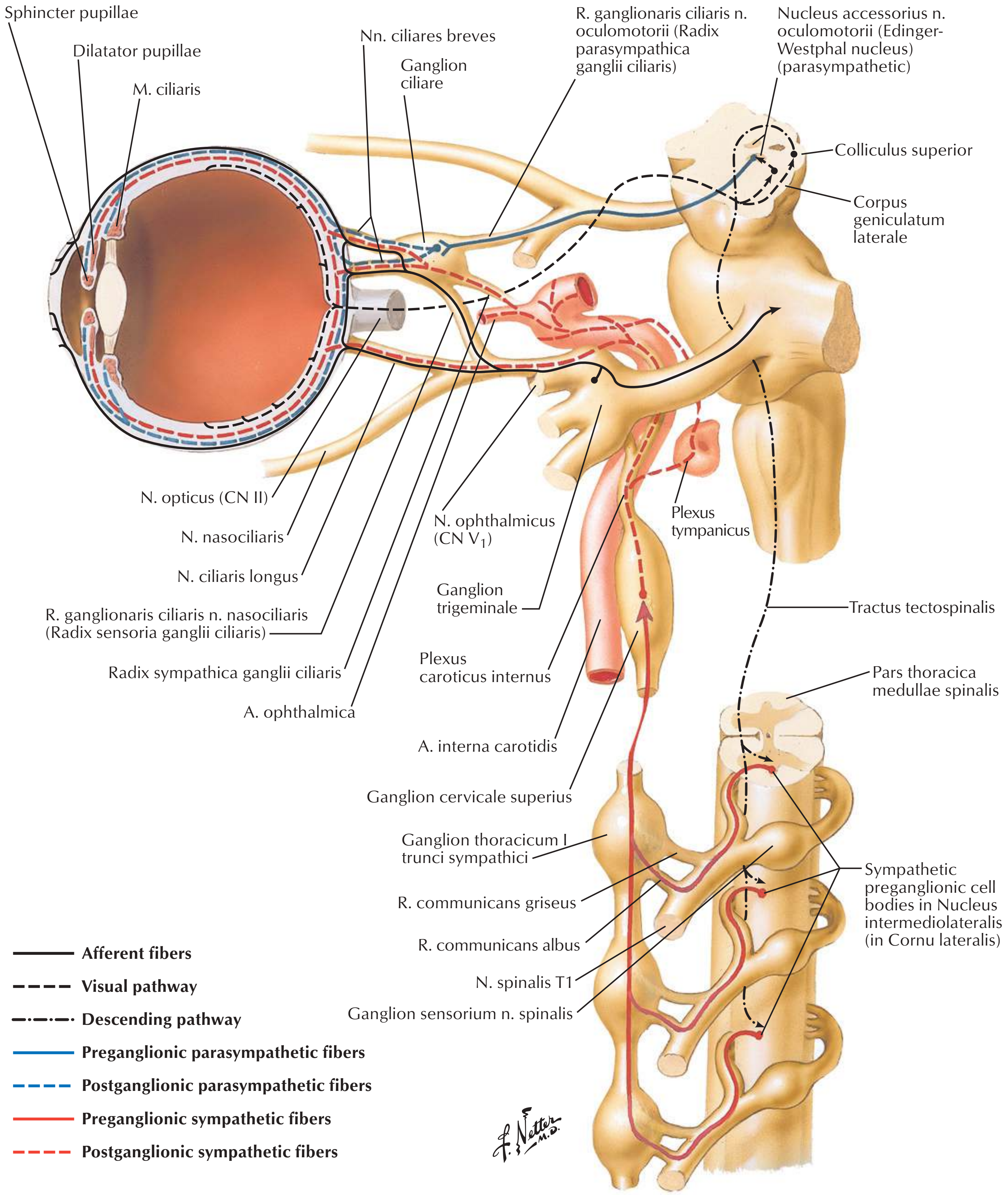
Autonomic Nerves in Head

See also Plates 62, 133, 144


N. petrosus major
N. petrosus profundus
N. canalis pterygoidei (Vidii)
N. oculomotorius (CN III)
N. maxillaris (CN V_2)
N. ophthalmicus (CN V_1)
N. frontalis; N. lacrimalis (*cut*)
N. trigeminus (CN V)
Radix sensoria
Radix motoria
Ganglion
A. interna carotidis; Plexus caroticus internus
Ganglion geniculi
Radix motoria n. facialis
Nervus intermedius (Wrisbergii)
N. vestibulocochlearis (CN VIII)
N. glossopharyngeus (CN IX)
N. vagus (CN X)
N. mandibularis (CN V_3)
Ganglion oticum
N. caroticus internus
Chorda tympani
R. pharyngeus n. vagi (CN X)
N. laryngeus superior (*cut*)
Ganglion cervicale superius
A. interna carotidis; Plexus caroticus internus
R. sinus carotidis n. glossopharyngei
Truncus sympathicus
R. cardiacus cervicalis superior n. vagi
Plexus pharyngeus
A. maxillaris
A. externa carotidis; Plexus caroticus externus
A. meningea media
A. facialis
A. communis carotidis; Plexus caroticus communis
N. cardiacus cervicalis superior (sympathetic)
N. nasociliaris
Radix sensoria
Radix sympathica
Radix parasympathica
Radices ganglii ciliaris
Ganglion ciliare
N. ciliaris longus
Nn. ciliares breves
Rr. nasales posteriores superiores laterales (from Ganglion pterygopalatinum)
R. nasalis posterior inferior n. palatini majoris
Ganglion pterygopalatinum
Nn. palatini major and minores
N. lingualis
N. alveolaris inferior
Ganglion submandibulare
F. Netter M.D.

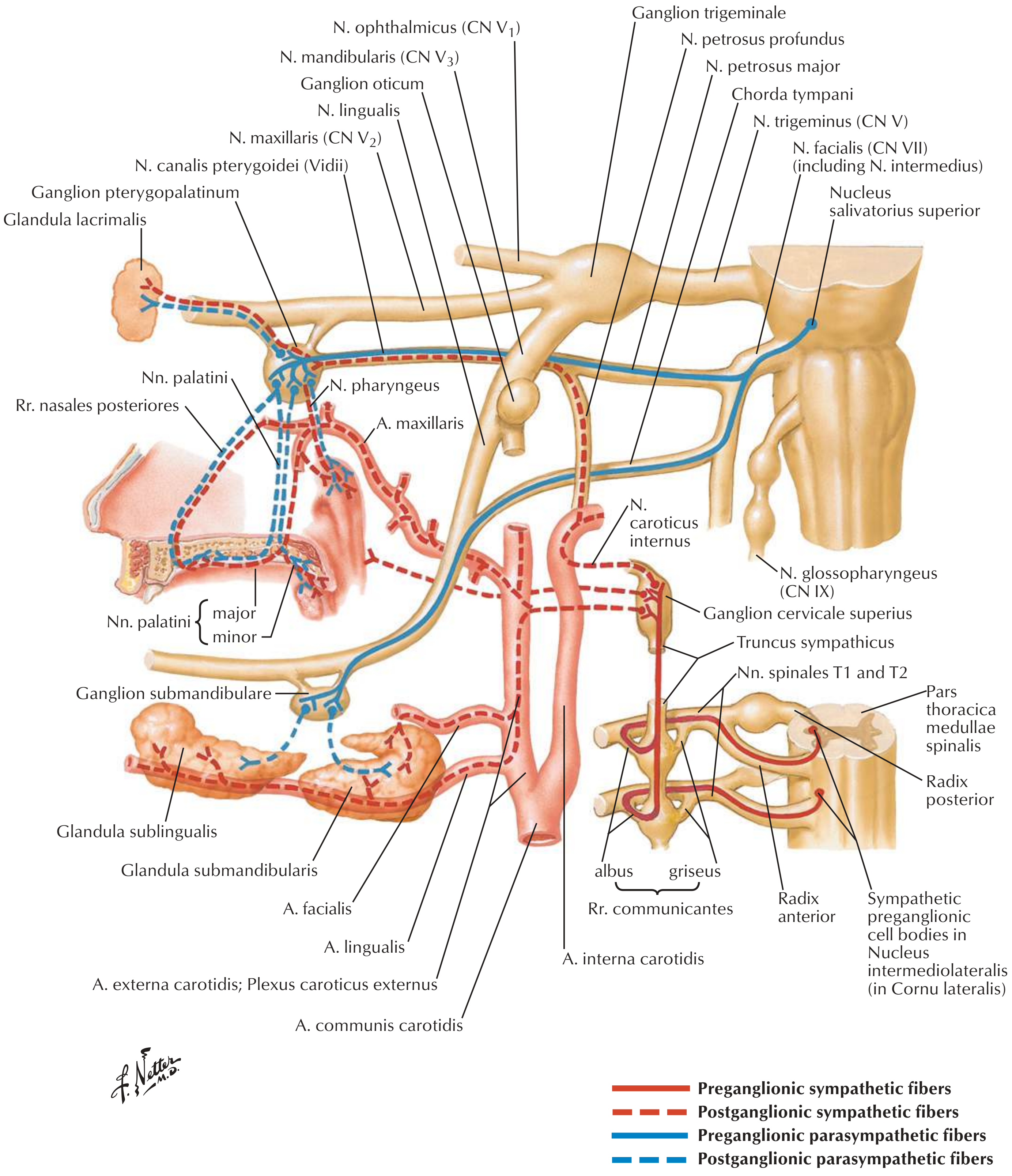
Ciliary Ganglion: Schema

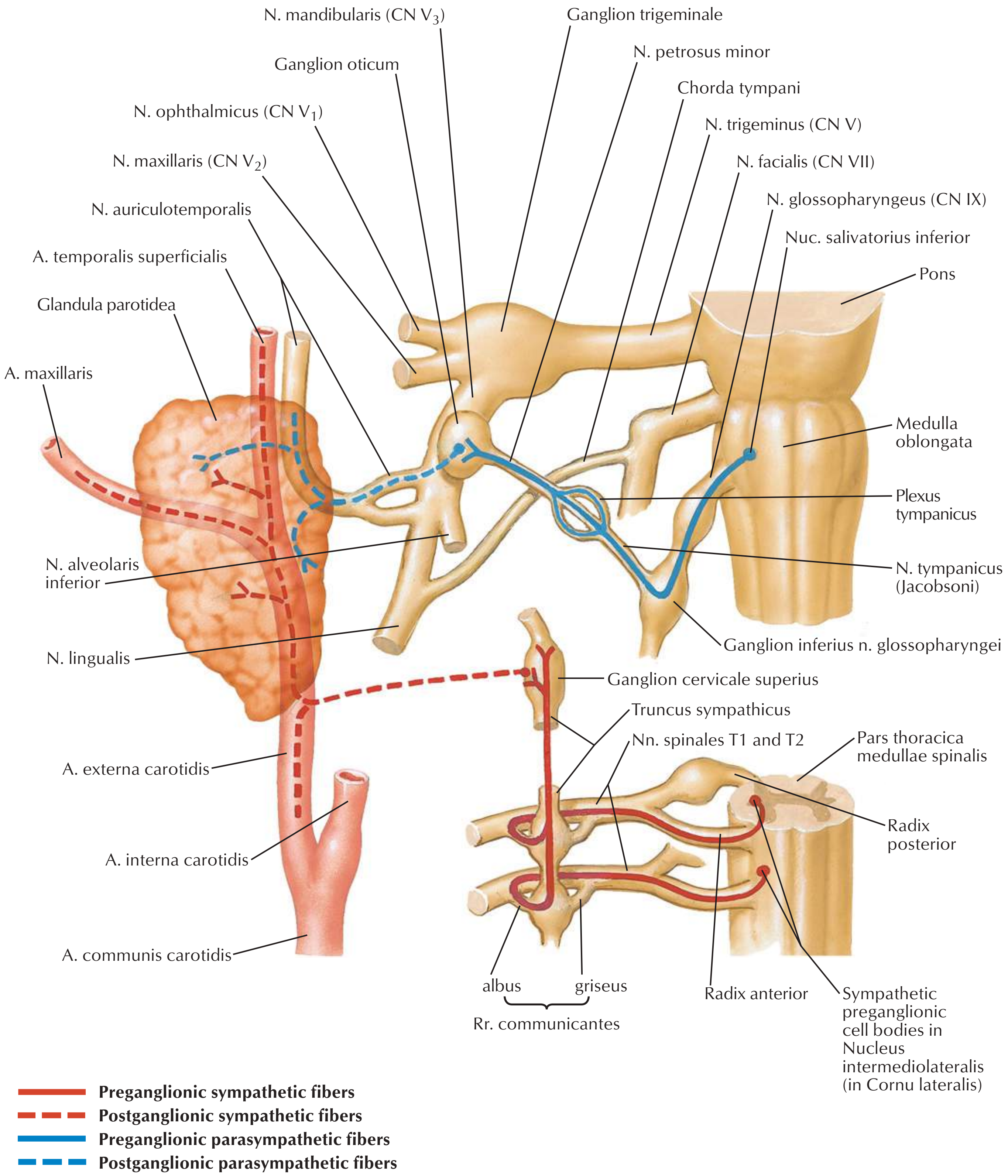
See also Plate 62


Sphincter pupillae
Dilatator pupillae
M. ciliaris
Nn. ciliares breves
Ganglion ciliare
R. ganglionaris ciliaris n. oculomotorii (Radix parasympathica ganglii ciliaris)
Nucleus accessorius n. oculomotorii (Edinger-Westphal nucleus) (parasympathetic)
Colliculus superior
Corpus geniculatum laterale
N. opticus (CN II)
N. nasociliaris
N. ciliaris longus
R. ganglionaris ciliaris n. nasociliaris (Radix sensoria ganglii ciliaris)
Radix sympathica ganglii ciliaris
A. ophthalmica
N. ophthalmicus (CN V_1)
Ganglion trigeminale
Plexus caroticus internus
A. interna carotidis
Ganglion cervicale superius
Plexus tympanicus
Tractus tectospinalis
Pars thoracica medullae spinalis
Ganglion thoracicum I trunci sympathici
R. communicans griseus
R. communicans albus
N. spinalis T1
Ganglion sensorium n. spinalis
Sympathetic preganglionic cell bodies in Nucleus intermediolateralis (in Cornu lateralis)
Afferent fibers
Visual pathway
Descending pathway
Preganglionic parasympathetic fibers
Postganglionic parasympathetic fibers
Preganglionic sympathetic fibers
Postganglionic sympathetic fibers
F. Netter M.D.

Pterygopalatine and Submandibular Ganglia: Schema

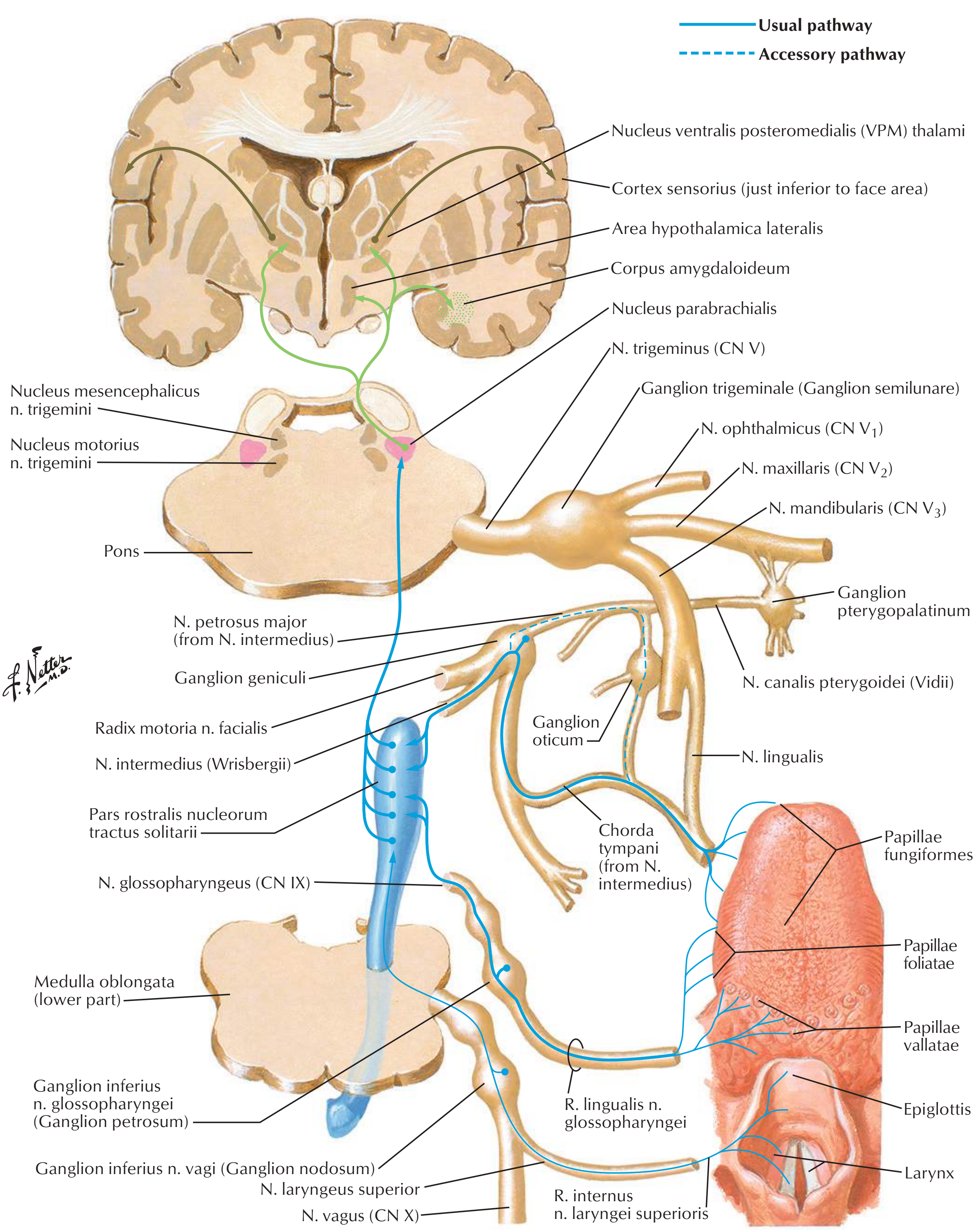
See also Plate 95


Ganglion trigeminale
N. ophthalmicus (CN V_1)
N. petrosus profundus
N. mandibularis (CN V_3)
N. petrosus major
Ganglion oticum
Chorda tympani
N. lingualis
N. trigeminus (CN V)
N. maxillaris (CN V_2)
N. facialis (CN VII) (including N. intermedius)
N. canalis pterygoidei (Vidii)
Nucleus salivatorius superior
Ganglion pterygopalatinum
Glandula lacrimalis
Nn. palatini
N. pharyngeus
Rr. nasales posteriores
A. maxillaris
N. caroticus internus
N. glossopharyngeus (CN IX)
major
Nn. palatini
minor
Ganglion cervicale superius
Truncus sympathicus
Nn. spinales T1 and T2
Ganglion submandibulare
Pars thoracica medullae spinalis
Radix posterior
Glandula sublingualis
Glandula submandibularis
albus
griseus
Rr. communicantes
Radix anterior
Sympathetic preganglionic cell bodies in Nucleus intermediolateralis (in Cornu lateralis)
A. facialis
A. lingualis
A. interna carotidis
A. externa carotidis; Plexus caroticus externus
A. communis carotidis
F. Netter M.D.
Preganglionic sympathetic fibers
Postganglionic sympathetic fibers
Preganglionic parasympathetic fibers
Postganglionic parasympathetic fibers


N. mandibularis (CN V$_3$)
Ganglion trigeminale
N. petrosus minor
Ganglion oticum
Chorda tympani
N. ophthalmicus (CN V$_1$)
N. trigeminus (CN V)
N. maxillaris (CN V$_2$)
N. facialis (CN VII)
N. glossopharyngeus (CN IX)
N. auriculotemporalis
Nuc. salivatorius inferior
A. temporalis superficialis
Pons
Glandula parotidea
A. maxillaris
Medulla oblongata
Plexus tympanicus
N. alveolaris inferior
N. tympanicus (Jacobsoni)
N. lingualis
Ganglion inferius n. glossopharyngei
Ganglion cervicale superius
Truncus sympathicus
Nn. spinales T1 and T2
Pars thoracica medullae spinalis
A. externa carotidis
Radix posterior
A. interna carotidis
A. communis carotidis
albus
griseus
Rr. communicantes
Radix anterior
Sympathetic preganglionic cell bodies in Nucleus intermediolateralis (in Cornu lateralis)
━━ Preganglionic sympathetic fibers
- - - Postganglionic sympathetic fibers
━━ Preganglionic parasympathetic fibers
- - - Postganglionic parasympathetic fibers

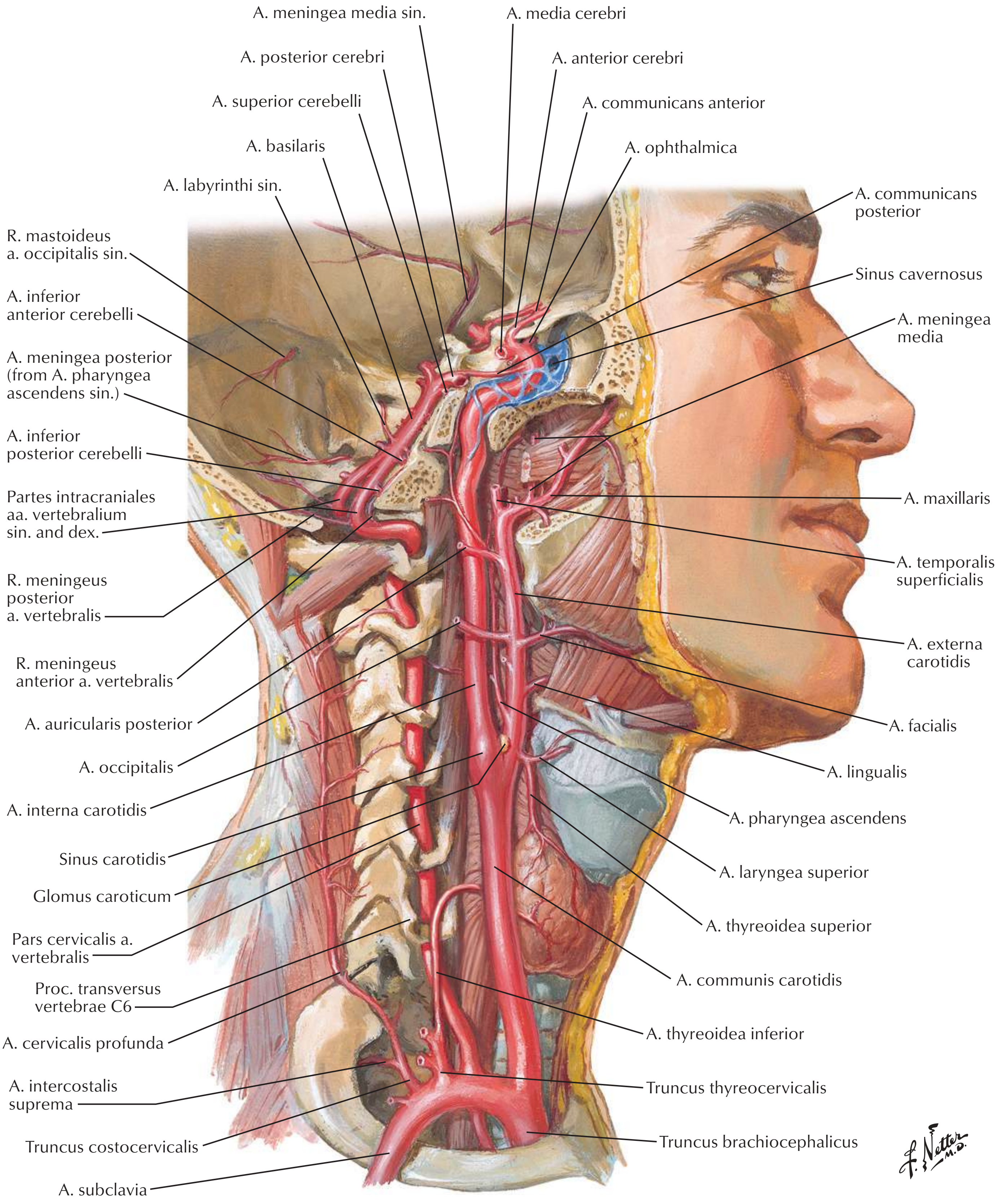
Taste Pathways: Schema

See also Plates 134, 136


Usual pathway
Accessory pathway
Nucleus ventralis posteromedialis (VPM) thalami
Cortex sensorius (just inferior to face area)
Area hypothalamica lateralis
Corpus amygdaloideum
Nucleus parabrachialis
N. trigeminus (CN V)
Ganglion trigeminale (Ganglion semilunare)
N. ophthalmicus (CN V_1)
N. maxillaris (CN V_2)
N. mandibularis (CN V_3)
Nucleus mesencephalicus n. trigemini
Nucleus motorius n. trigemini
Pons
Ganglion pterygopalatinum
N. petrosus major (from N. intermedius)
Ganglion geniculi
N. canalis pterygoidei (Vidii)
F. Netter M.D.
Radix motoria n. facialis
Ganglion oticum
N. intermedius (Wrisbergii)
N. lingualis
Pars rostralis nucleorum tractus solitarii
Chorda tympani (from N. intermedius)
Papillae fungiformes
N. glossopharyngeus (CN IX)
Papillae foliatae
Medulla oblongata (lower part)
Papillae vallatae
Ganglion inferius n. glossopharyngei (Ganglion petrosum)
R. lingualis n. glossopharyngei
Epiglottis
Ganglion inferius n. vagi (Ganglion nodosum)
Larynx
N. laryngeus superior
R. internus n. laryngei superioris
N. vagus (CN X)

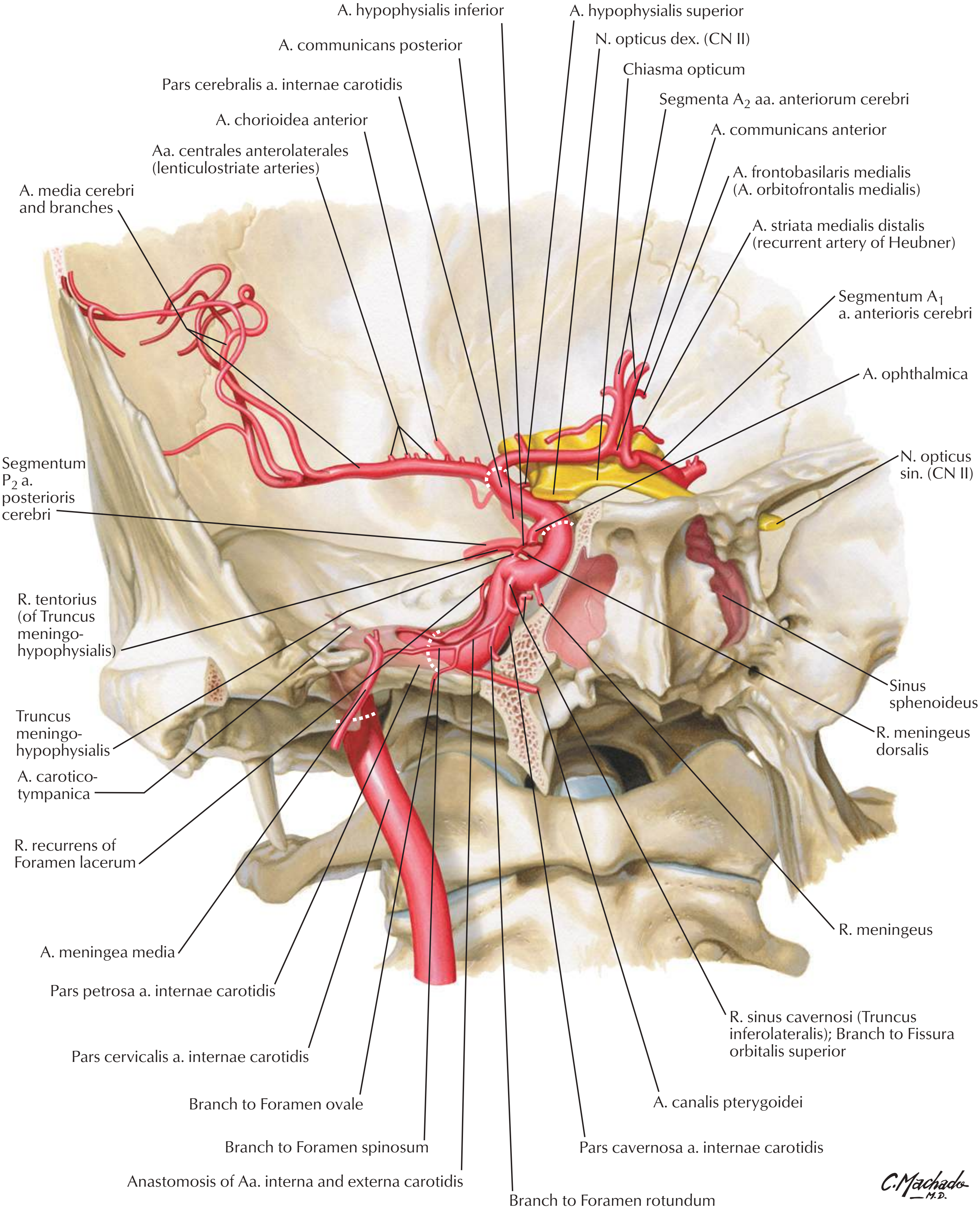
Arteries to Brain and Meninges

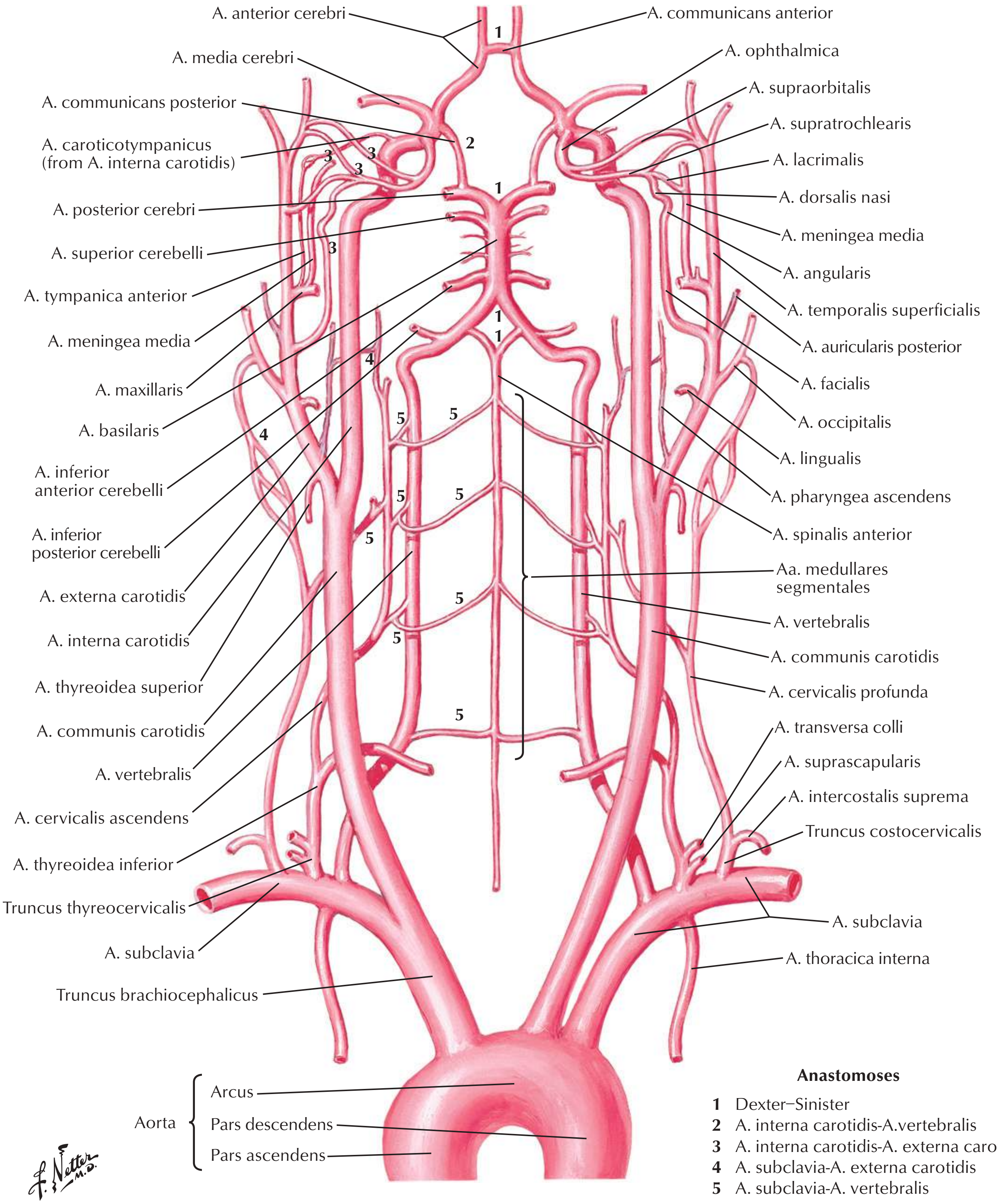
See also Plates 41, 64, 148


A. meningea media sin.
A. media cerebri
A. posterior cerebri
A. anterior cerebri
A. superior cerebelli
A. communicans anterior
A. basilaris
A. ophthalmica
A. labyrinthi sin.
A. communicans posterior
R. mastoideus a. occipitalis sin.
Sinus cavernosus
A. inferior anterior cerebelli
A. meningea media
A. meningea posterior (from A. pharyngea ascendens sin.)
A. inferior posterior cerebelli
Partes intracraniales aa. vertebralium sin. and dex.
A. maxillaris
A. temporalis superficialis
R. meningeus posterior a. vertebralis
A. externa carotidis
R. meningeus anterior a. vertebralis
A. facialis
A. auricularis posterior
A. lingualis
A. occipitalis
A. pharyngea ascendens
A. interna carotidis
Sinus carotidis
A. laryngea superior
Glomus caroticum
A. thyreoidea superior
Pars cervicalis a. vertebralis
A. communis carotidis
Proc. transversus vertebrae C6
A. thyreoidea inferior
A. cervicalis profunda
A. intercostalis suprema
Truncus thyreocervicalis
Truncus brachiocephalicus
Truncus costocervicalis
A. subclavia
F. Netter M.D.

Internal Carotid Artery in Petrous Part of Temporal Bone

See also Plates 147, 150


A. hypophysialis inferior
A. hypophysialis superior
N. opticus dex. (CN II)
A. communicans posterior
Chiasma opticum
Pars cerebralis a. internae carotidis
Segmenta A_2 aa. anteriorum cerebri
A. chorioidea anterior
A. communicans anterior
Aa. centrales anterolaterales (lenticulostriate arteries)
A. frontobasilaris medialis (A. orbitofrontalis medialis)
A. media cerebri and branches
A. striata medialis distalis (recurrent artery of Heubner)
Segmentum A_1 a. anterioris cerebri
A. ophthalmica
Segmentum P_2 a. posterioris cerebri
N. opticus sin. (CN II)
R. tentorius (of Truncus meningo-hypophysialis)
Sinus sphenoideus
Truncus meningo-hypophysialis
R. meningeus dorsalis
A. carotico-tympanica
R. recurrens of Foramen lacerum
R. meningeus
A. meningea media
Pars petrosa a. internae carotidis
R. sinus cavernosi (Truncus inferolateralis); Branch to Fissura orbitalis superior
Pars cervicalis a. internae carotidis
Branch to Foramen ovale
A. canalis pterygoidei
Branch to Foramen spinosum
Pars cavernosa a. internae carotidis
Anastomosis of Aa. interna and externa carotidis
Branch to Foramen rotundum
C. Machado M.D.

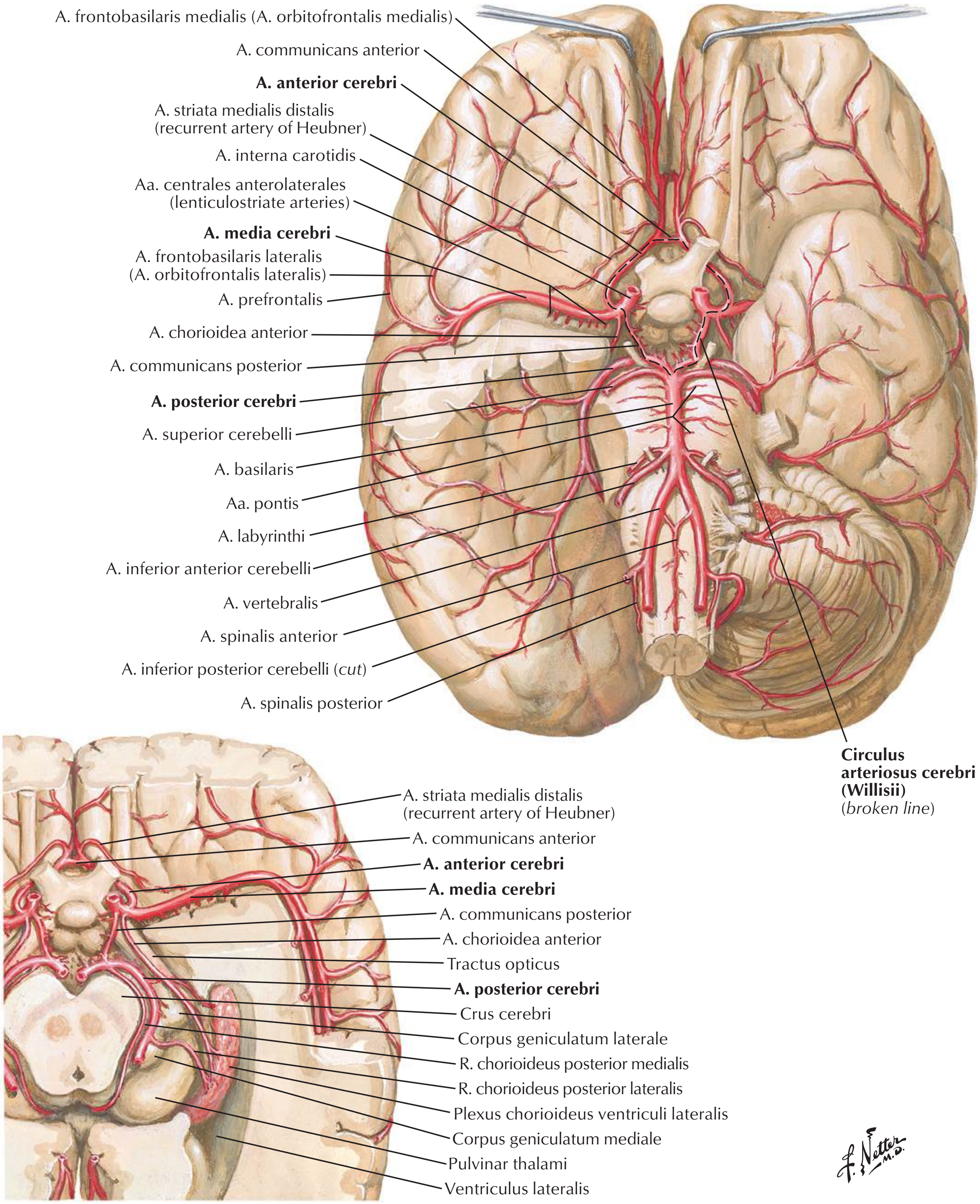

A. anterior cerebri
A. media cerebri
A. communicans posterior
A. caroticotympanicus (from A. interna carotidis)
A. posterior cerebri
A. superior cerebelli
A. tympanica anterior
A. meningea media
A. maxillaris
A. basilaris
A. inferior anterior cerebelli
A. inferior posterior cerebelli
A. externa carotidis
A. interna carotidis
A. thyreoidea superior
A. communis carotidis
A. vertebralis
A. cervicalis ascendens
A. thyreoidea inferior
Truncus thyreocervicalis
A. subclavia
Truncus brachiocephalicus
Aorta
Arcus
Pars descendens
Pars ascendens
A. communicans anterior
A. ophthalmica
A. supraorbitalis
A. supratrochlearis
A. lacrimalis
A. dorsalis nasi
A. meningea media
A. angularis
A. temporalis superficialis
A. auricularis posterior
A. facialis
A. occipitalis
A. lingualis
A. pharyngea ascendens
A. spinalis anterior
Aa. medullares segmentales
A. vertebralis
A. communis carotidis
A. cervicalis profunda
A. transversa colli
A. suprascapularis
A. intercostalis suprema
Truncus costocervicalis
A. subclavia
A. thoracica interna
1
2
3
3
3
1
3
1
1
4
4
5
5
5
5
5
5
5
5
5

Anastomoses

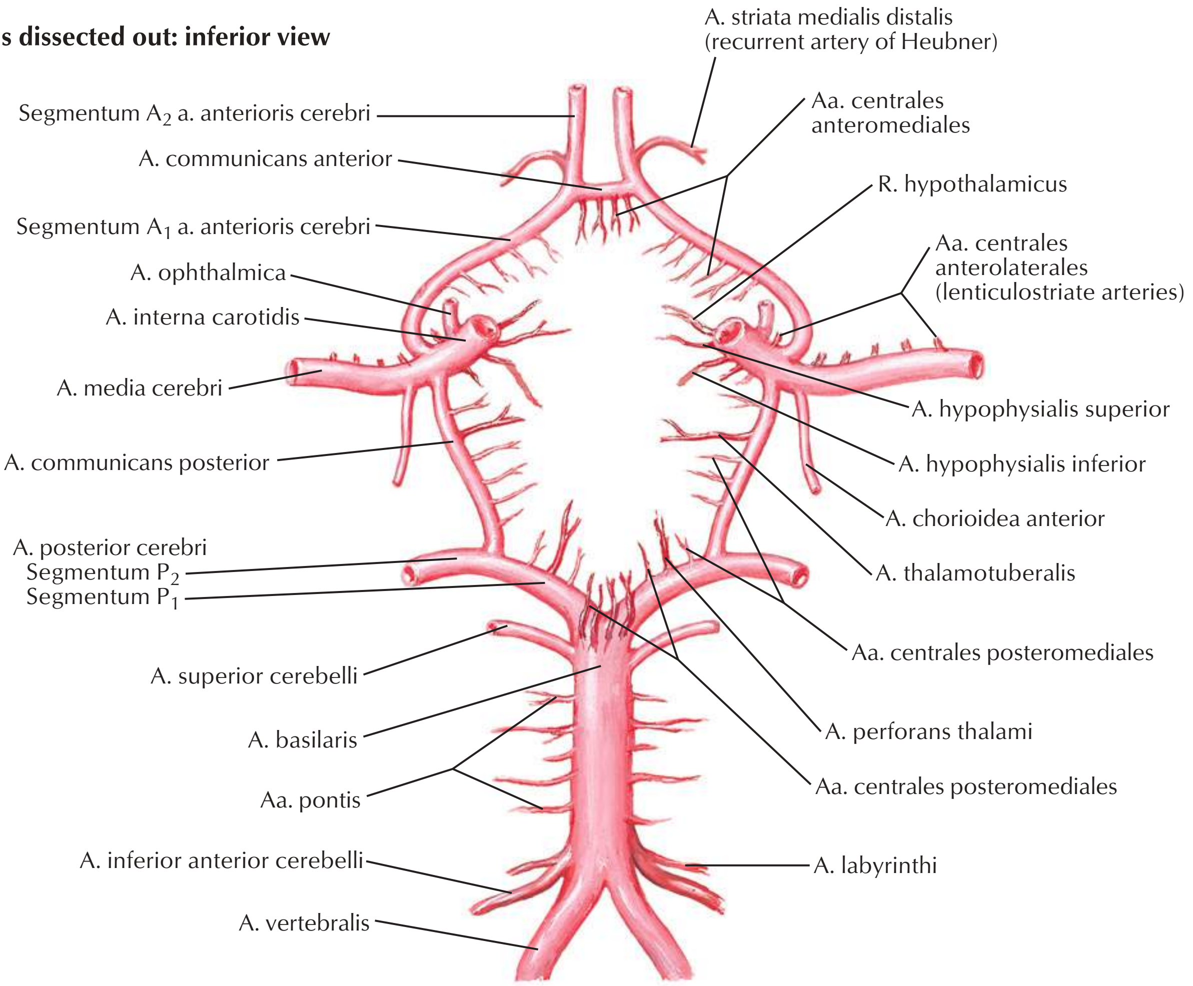
1 Dexter–Sinister
2 A. interna carotidis-A.vertebralis
3 A. interna carotidis-A. externa carotidis
4 A. subclavia-A. externa carotidis
5 A. subclavia-A. vertebralis

Arteries of Brain: Inferior Views

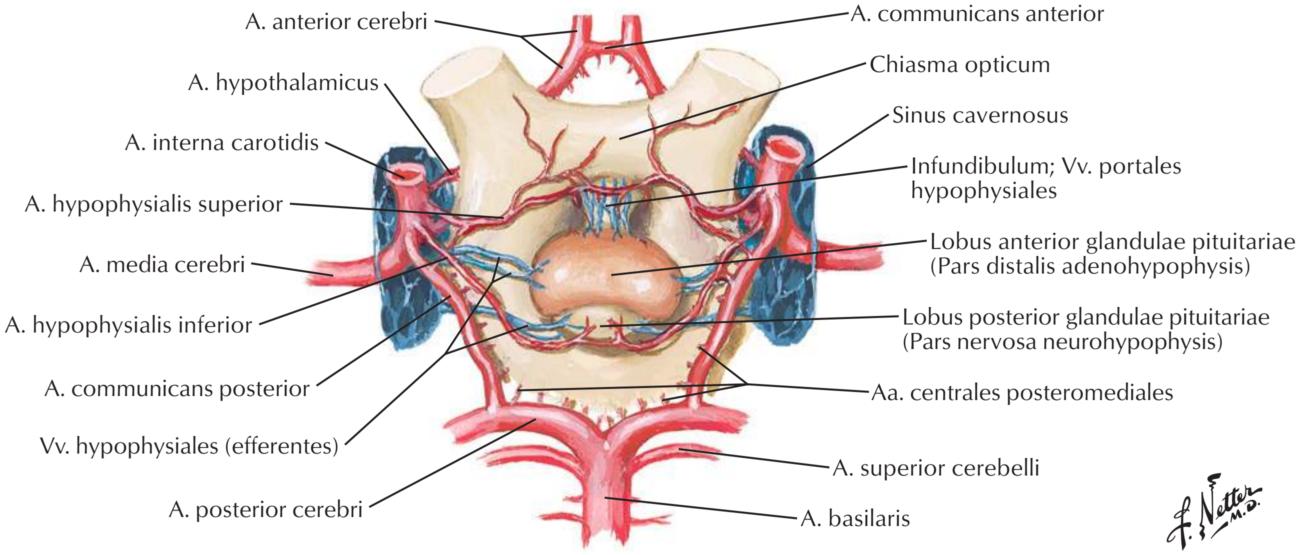
See also Plate 148

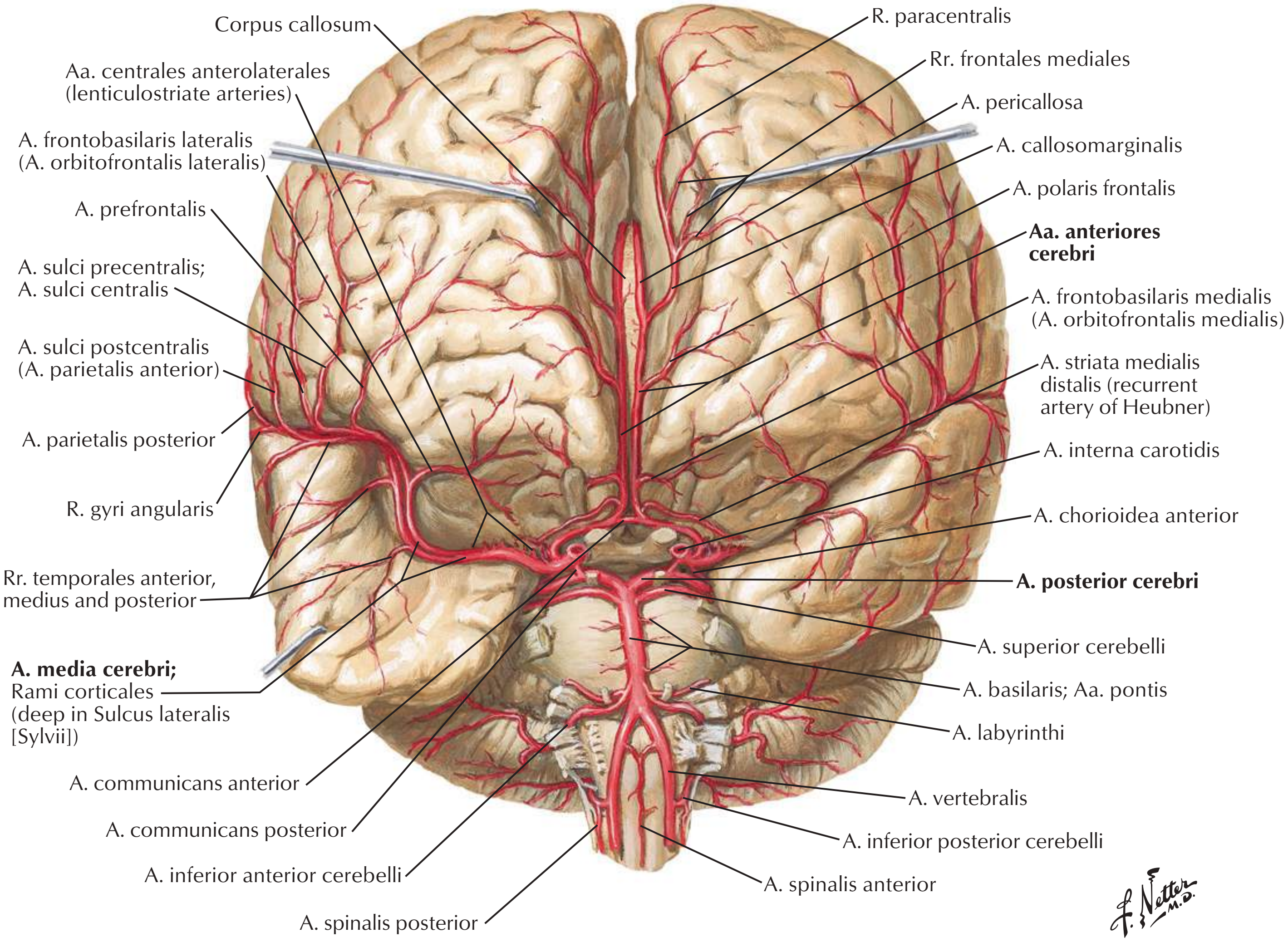

A. frontobasilaris medialis (A. orbitofrontalis medialis)
A. communicans anterior
A. anterior cerebri
A. striata medialis distalis (recurrent artery of Heubner)
A. interna carotidis
Aa. centrales anterolaterales (lenticulostriate arteries)
A. media cerebri
A. frontobasilaris lateralis (A. orbitofrontalis lateralis)
A. prefrontalis
A. chorioidea anterior
A. communicans posterior
A. posterior cerebri
A. superior cerebelli
A. basilaris
Aa. pontis
A. labyrinthi
A. inferior anterior cerebelli
A. vertebralis
A. spinalis anterior
A. inferior posterior cerebelli (*cut*)
A. spinalis posterior
Circulus arteriosus cerebri (Willisii)
(*broken line*)
A. striata medialis distalis (recurrent artery of Heubner)
A. communicans anterior
A. anterior cerebri
A. media cerebri
A. communicans posterior
A. chorioidea anterior
Tractus opticus
A. posterior cerebri
Crus cerebri
Corpus geniculatum laterale
R. chorioideus posterior medialis
R. chorioideus posterior lateralis
Plexus chorioideus ventriculi lateralis
Corpus geniculatum mediale
Pulvinar thalami
Ventriculus lateralis
F. Netter M.D.

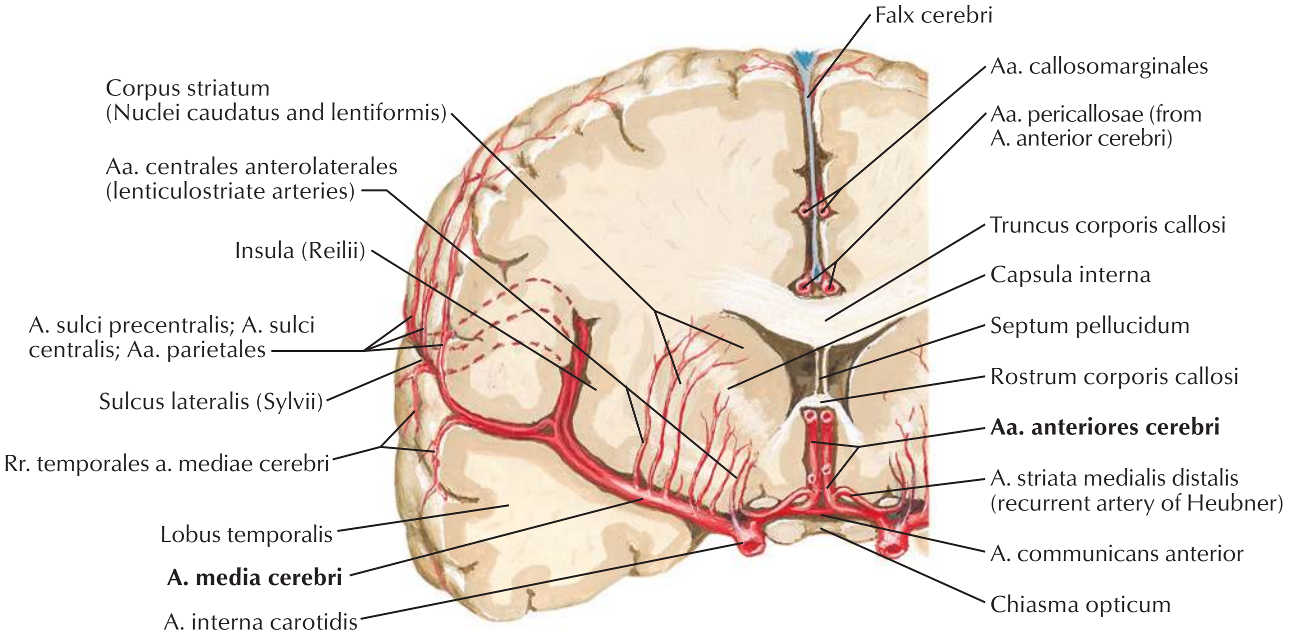
Vessels dissected out: inferior view


A. striata medialis distalis (recurrent artery of Heubner)
Segmentum A_2 a. anterioris cerebri
Aa. centrales anteromediales
A. communicans anterior
R. hypothalamicus
Segmentum A_1 a. anterioris cerebri
Aa. centrales anterolaterales (lenticulostriate arteries)
A. ophthalmica
A. interna carotidis
A. media cerebri
A. hypophysialis superior
A. communicans posterior
A. hypophysialis inferior
A. chorioidea anterior
A. posterior cerebri
Segmentum P_2
Segmentum P_1
A. thalamotuberalis
Aa. centrales posteromediales
A. superior cerebelli
A. basilaris
A. perforans thalami
Aa. pontis
Aa. centrales posteromediales
A. inferior anterior cerebelli
A. labyrinthi
A. vertebralis

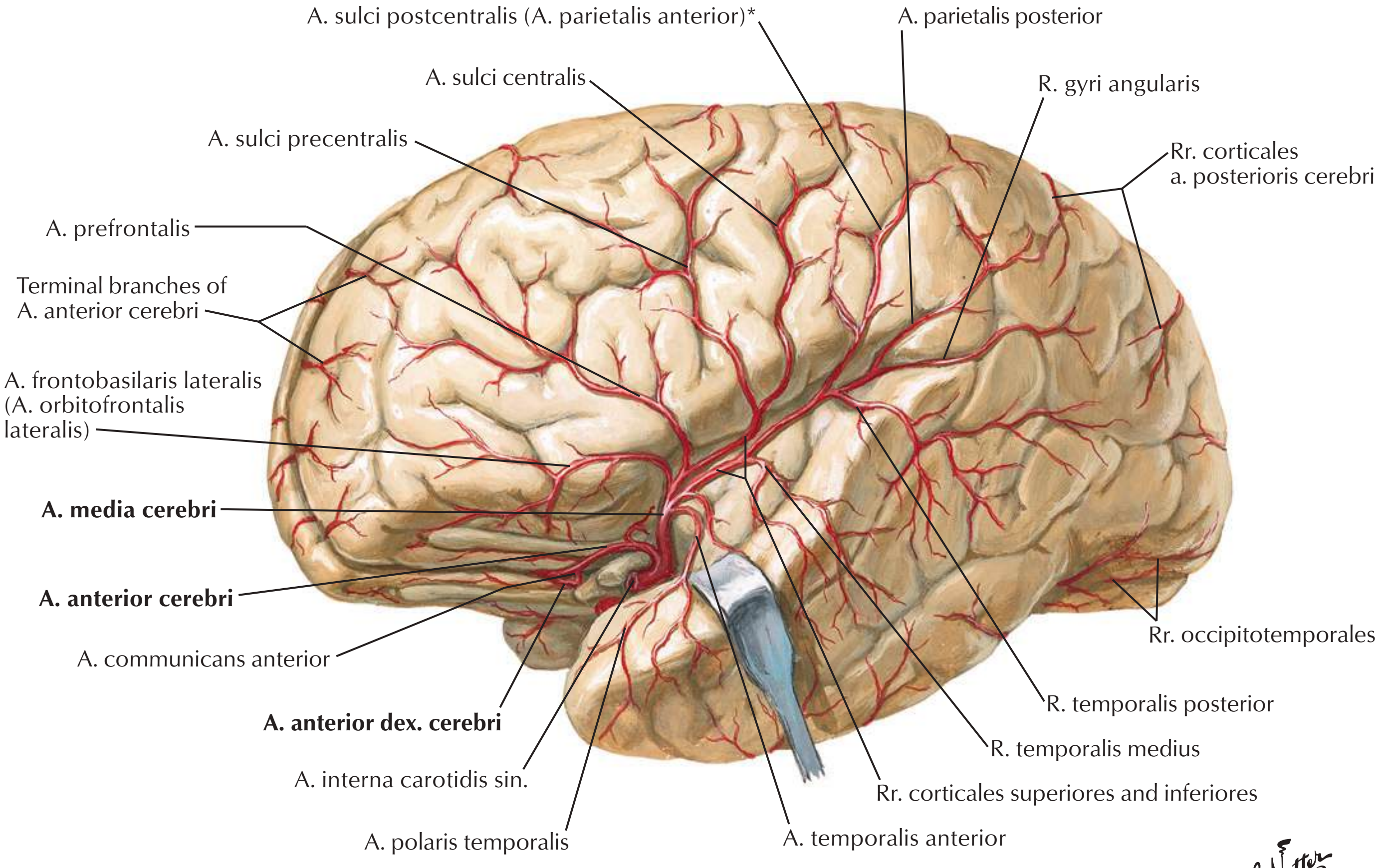
Vessels in situ: inferior view


A. anterior cerebri
A. communicans anterior
A. hypothalamicus
Chiasma opticum
A. interna carotidis
Sinus cavernosus
Infundibulum; Vv. portales hypophysiales
A. hypophysialis superior
A. media cerebri
Lobus anterior glandulae pituitariae (Pars distalis adenohypophysis)
A. hypophysialis inferior
Lobus posterior glandulae pituitariae (Pars nervosa neurohypophysis)
A. communicans posterior
Aa. centrales posteromediales
Vv. hypophysiales (efferentes)
A. superior cerebelli
A. posterior cerebri
A. basilaris

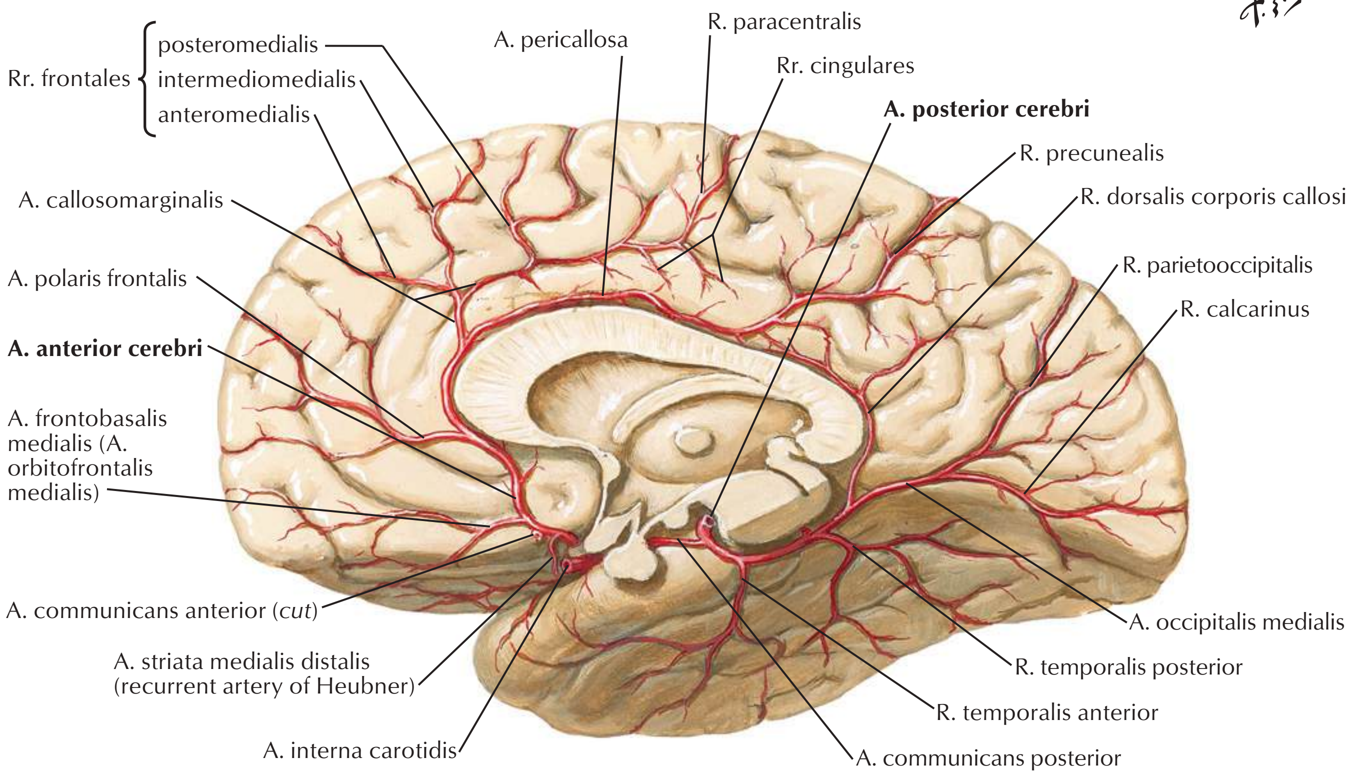

Corpus callosum
Aa. centrales anterolaterales (lenticulostriate arteries)
A. frontobasilaris lateralis (A. orbitofrontalis lateralis)
A. prefrontalis
A. sulci precentralis; A. sulci centralis
A. sulci postcentralis (A. parietalis anterior)
A. parietalis posterior
R. gyri angularis
Rr. temporales anterior, medius and posterior
A. media cerebri;
Rami corticales (deep in Sulcus lateralis [Sylvii])
A. communicans anterior
A. communicans posterior
A. inferior anterior cerebelli
A. spinalis posterior
R. paracentralis
Rr. frontales mediales
A. pericallosa
A. callosomarginalis
A. polaris frontalis
Aa. anteriores cerebri
A. frontobasilaris medialis (A. orbitofrontalis medialis)
A. striata medialis distalis (recurrent artery of Heubner)
A. interna carotidis
A. chorioidea anterior
A. posterior cerebri
A. superior cerebelli
A. basilaris; Aa. pontis
A. labyrinthi
A. vertebralis
A. inferior posterior cerebelli
A. spinalis anterior
F. Netter M.D.


Falx cerebri
Corpus striatum (Nuclei caudatus and lentiformis)
Aa. centrales anterolaterales (lenticulostriate arteries)
Insula (Reilii)
A. sulci precentralis; A. sulci centralis; Aa. parietales
Sulcus lateralis (Sylvii)
Rr. temporales a. mediae cerebri
Lobus temporalis
A. media cerebri
A. interna carotidis
Aa. callosomarginales
Aa. pericallosae (from A. anterior cerebri)
Truncus corporis callosi
Capsula interna
Septum pellucidum
Rostrum corporis callosi
Aa. anteriores cerebri
A. striata medialis distalis (recurrent artery of Heubner)
A. communicans anterior
Chiasma opticum

Arteries of Brain: Lateral and Medial Views

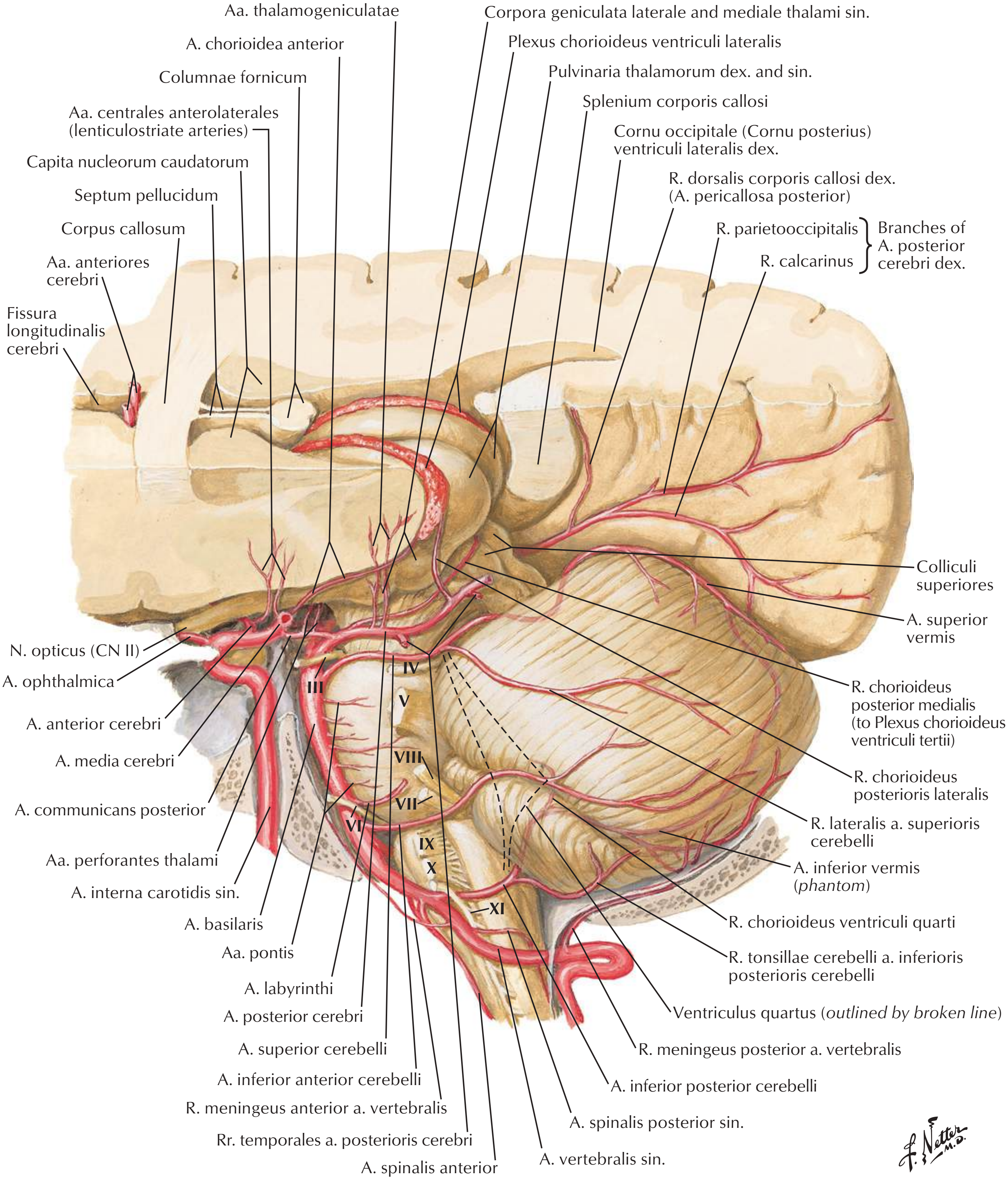


A. sulci postcentralis (A. parietalis anterior)*
A. parietalis posterior
A. sulci centralis
R. gyri angularis
A. sulci precentralis
Rr. corticales a. posterioris cerebri
A. prefrontalis
Terminal branches of A. anterior cerebri
A. frontobasilaris lateralis (A. orbitofrontalis lateralis)
A. media cerebri
A. anterior cerebri
Rr. occipitotemporales
A. communicans anterior
R. temporalis posterior
A. anterior dex. cerebri
R. temporalis medius
A. interna carotidis sin.
Rr. corticales superiores and inferiores
A. polaris temporalis
A. temporalis anterior

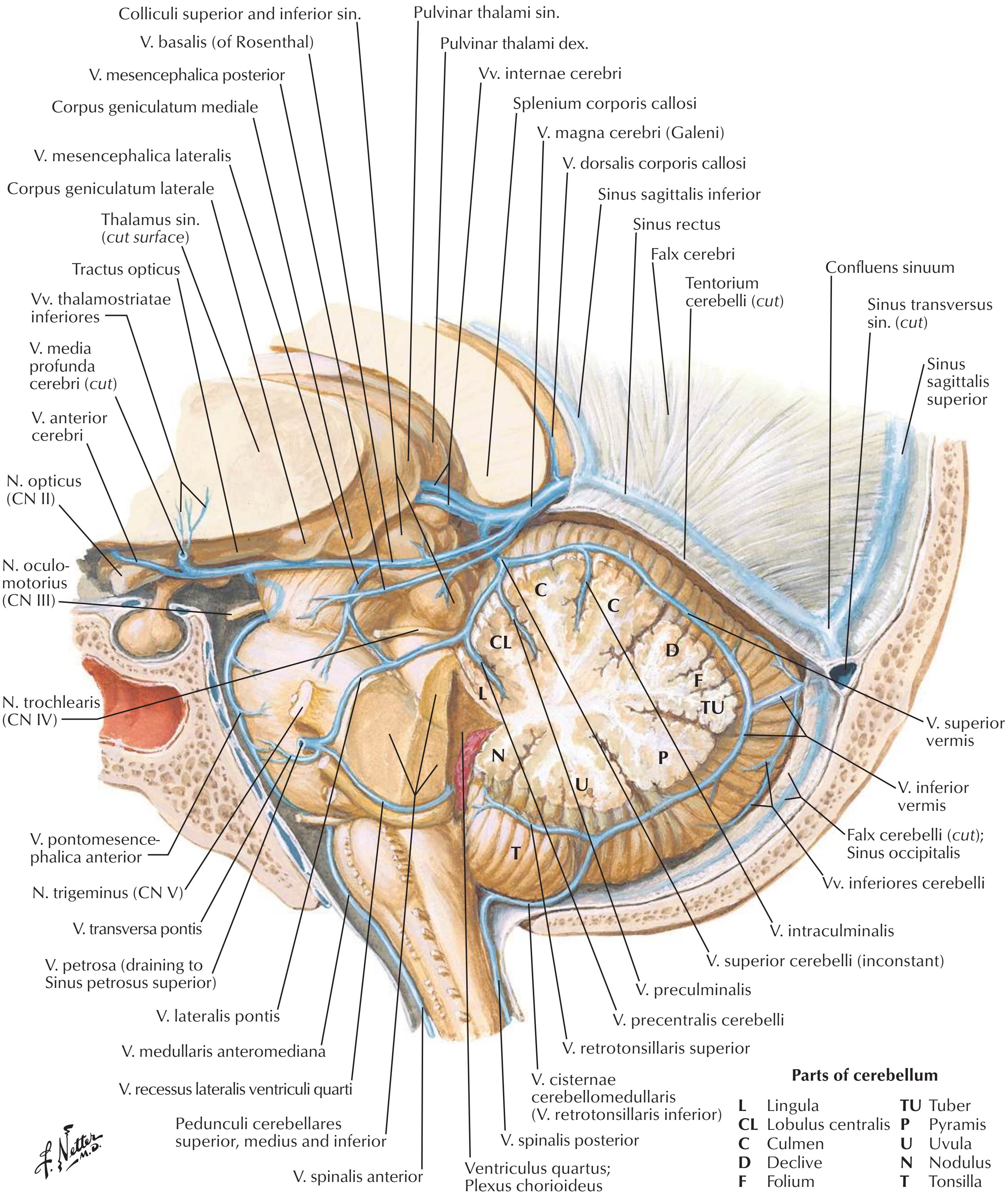


Rr. frontales
posteromedialis
intermediomedialis
anteromedialis
A. pericallosa
R. paracentralis
Rr. cingulares
A. posterior cerebri
R. precunealis
R. dorsalis corporis callosi
A. callosomarginalis
R. parietooccipitalis
A. polaris frontalis
R. calcarinus
A. anterior cerebri
A. frontobasalis medialis (A. orbitofrontalis medialis)
A. communicans anterior (*cut*)
A. occipitalis medialis
A. striata medialis distalis (recurrent artery of Heubner)
R. temporalis posterior
R. temporalis anterior
A. interna carotidis
A. communicans posterior

**Note: A. sulci postcentralis (A. parietalis anterior) also occurs as separate A. parietalis anterior and A. sulci postcentralis.*


Aa. thalamogeniculatae
A. chorioidea anterior
Columnae fornicum
Aa. centrales anterolaterales (lenticulostriate arteries)
Capita nucleorum caudatorum
Septum pellucidum
Corpus callosum
Aa. anteriores cerebri
Fissura longitudinalis cerebri
Corpora geniculata laterale and mediale thalami sin.
Plexus chorioideus ventriculi lateralis
Pulvinaria thalamorum dex. and sin.
Splenium corporis callosi
Cornu occipitale (Cornu posterius) ventriculi lateralis dex.
R. dorsalis corporis callosi dex. (A. pericallosa posterior)
R. parietooccipitalis
R. calcarinus
Branches of A. posterior cerebri dex.
Colliculi superiores
A. superior vermis
R. chorioideus posterior medialis (to Plexus chorioideus ventriculi tertii)
R. chorioideus posterioris lateralis
R. lateralis a. superioris cerebelli
A. inferior vermis (*phantom*)
R. chorioideus ventriculi quarti
R. tonsillae cerebelli a. inferioris posterioris cerebelli
Ventriculus quartus (*outlined by broken line*)
R. meningeus posterior a. vertebralis
A. inferior posterior cerebelli
A. spinalis posterior sin.
A. vertebralis sin.
N. opticus (CN II)
A. ophthalmica
A. anterior cerebri
A. media cerebri
A. communicans posterior
Aa. perforantes thalami
A. interna carotidis sin.
A. basilaris
Aa. pontis
A. labyrinthi
A. posterior cerebri
A. superior cerebelli
A. inferior anterior cerebelli
R. meningeus anterior a. vertebralis
Rr. temporales a. posterioris cerebri
A. spinalis anterior
III
IV
V
VI
VII
VIII
IX
X
XI
F. Netter M.D.

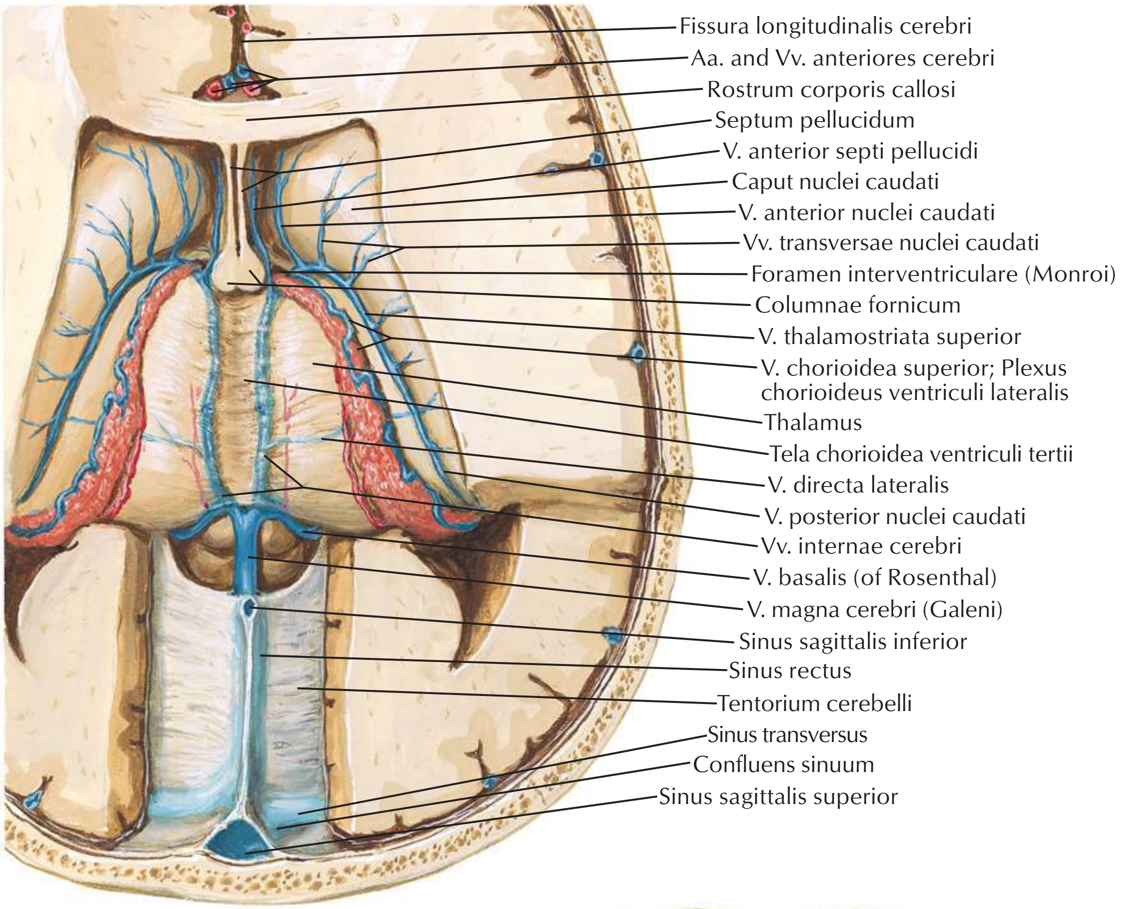
Veins of Posterior Cranial Fossa


Colliculi superior and inferior sin.
V. basalis (of Rosenthal)
V. mesencephalica posterior
Corpus geniculatum mediale
V. mesencephalica lateralis
Corpus geniculatum laterale
Thalamus sin. (*cut surface*)
Tractus opticus
Vv. thalamostriatae inferiores
V. media profunda cerebri (*cut*)
V. anterior cerebri
N. opticus (CN II)
N. oculomotorius (CN III)
N. trochlearis (CN IV)
V. pontomesencephalica anterior
N. trigeminus (CN V)
V. transversa pontis
V. petrosa (draining to Sinus petrosus superior)
V. lateralis pontis
V. medullaris anteromediana
V. recessus lateralis ventriculi quarti
Pedunculi cerebellares superior, medius and inferior
V. spinalis anterior
Ventriculus quartus; Plexus chorioideus
V. spinalis posterior
V. cisternae cerebellomedullaris (V. retrotonsillaris inferior)
V. retrotonsillaris superior
V. precentralis cerebelli
V. preculminalis
V. superior cerebelli (inconstant)
V. intraculminalis
Vv. inferiores cerebelli
Falx cerebelli (*cut*); Sinus occipitalis
V. inferior vermis
V. superior vermis
Sinus sagittalis superior
Sinus transversus sin. (*cut*)
Confluens sinuum
Tentorium cerebelli (*cut*)
Falx cerebri
Sinus rectus
Sinus sagittalis inferior
V. dorsalis corporis callosi
V. magna cerebri (Galeni)
Splenium corporis callosi
Vv. internae cerebri
Pulvinar thalami dex.
Pulvinar thalami sin.
C
C
CL
L
D
F
TU
P
N
U
T

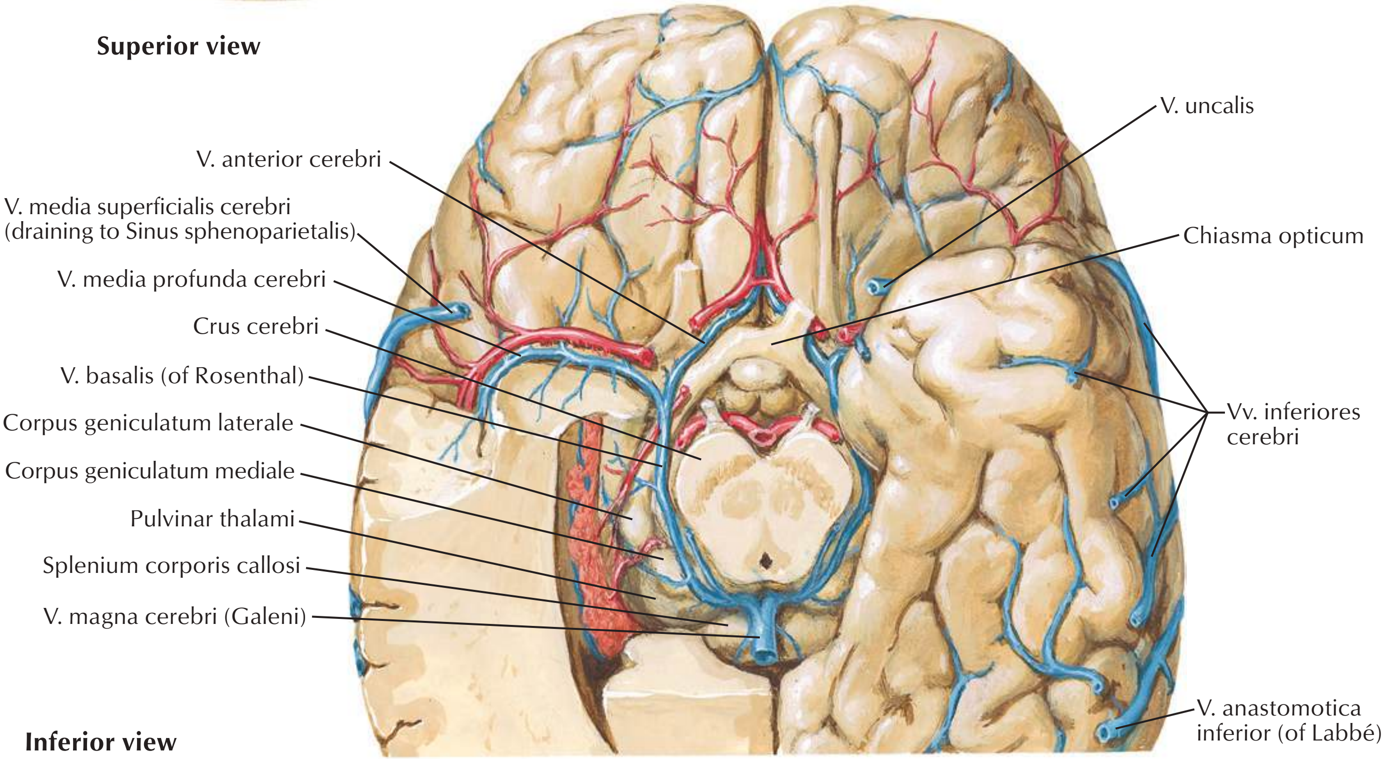
Parts of cerebellum

L	Lingula	**TU**	Tuber
CL	Lobulus centralis	**P**	Pyramis
C	Culmen	**U**	Uvula
D	Declive	**N**	Nodulus
F	Folium	**T**	Tonsilla

For superficial veins of brain see Plate 122

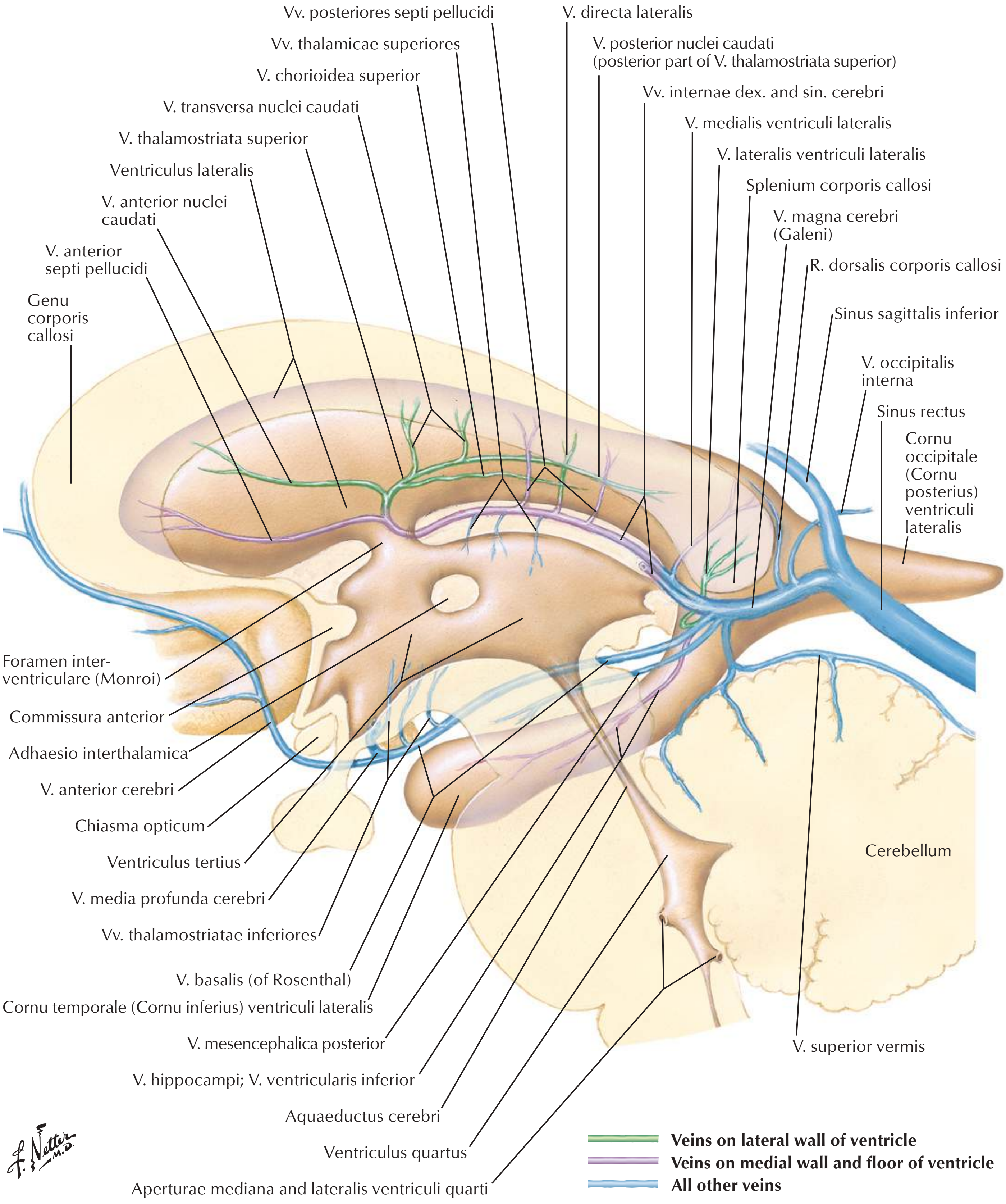

Fissura longitudinalis cerebri
Aa. and Vv. anteriores cerebri
Rostrum corporis callosi
Septum pellucidum
V. anterior septi pellucidi
Caput nuclei caudati
V. anterior nuclei caudati
Vv. transversae nuclei caudati
Foramen interventriculare (Monroi)
Columnae fornicum
V. thalamostriata superior
V. chorioidea superior; Plexus chorioideus ventriculi lateralis
Thalamus
Tela chorioidea ventriculi tertii
V. directa lateralis
V. posterior nuclei caudati
Vv. internae cerebri
V. basalis (of Rosenthal)
V. magna cerebri (Galeni)
Sinus sagittalis inferior
Sinus rectus
Tentorium cerebelli
Sinus transversus
Confluens sinuum
Sinus sagittalis superior

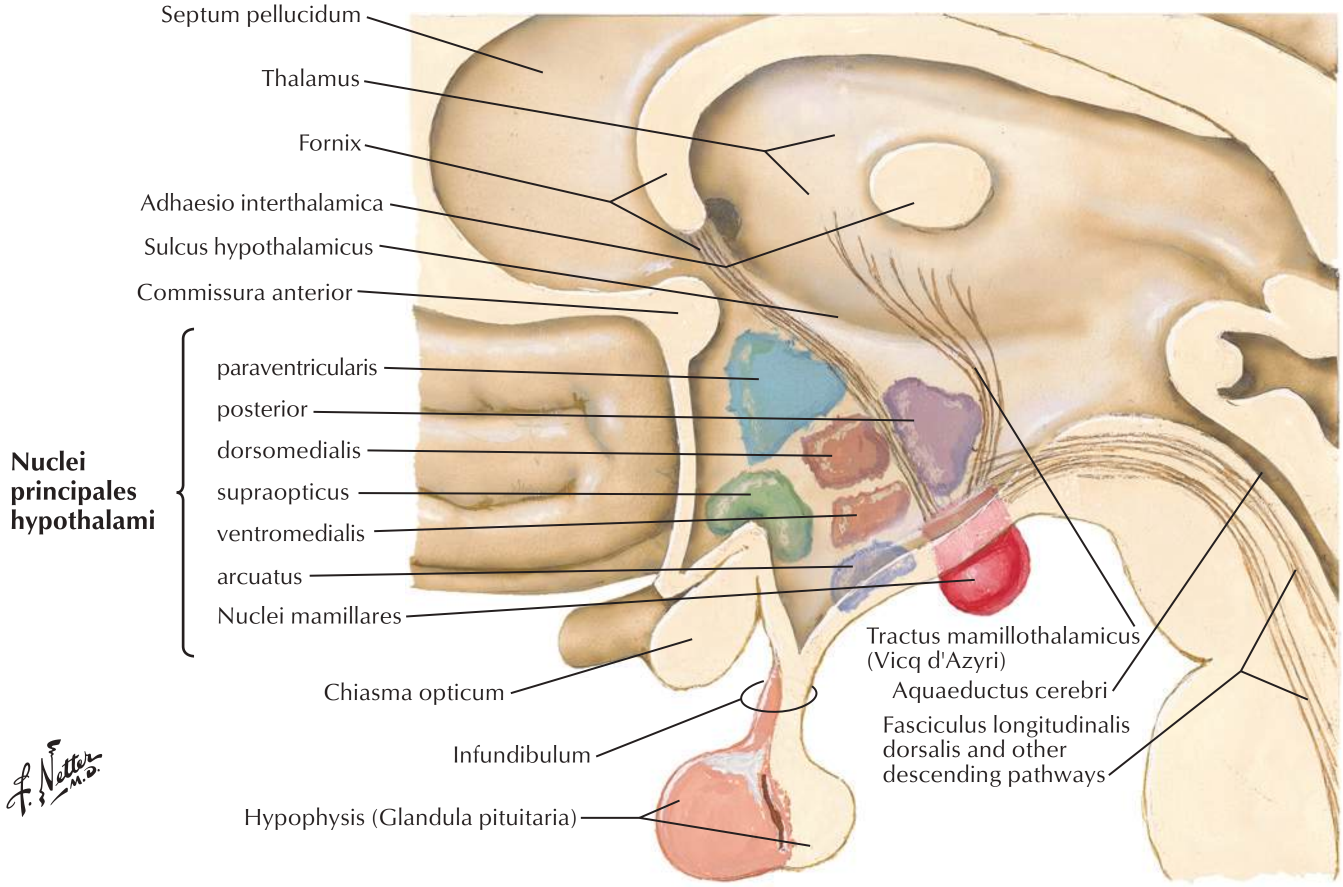
Superior view

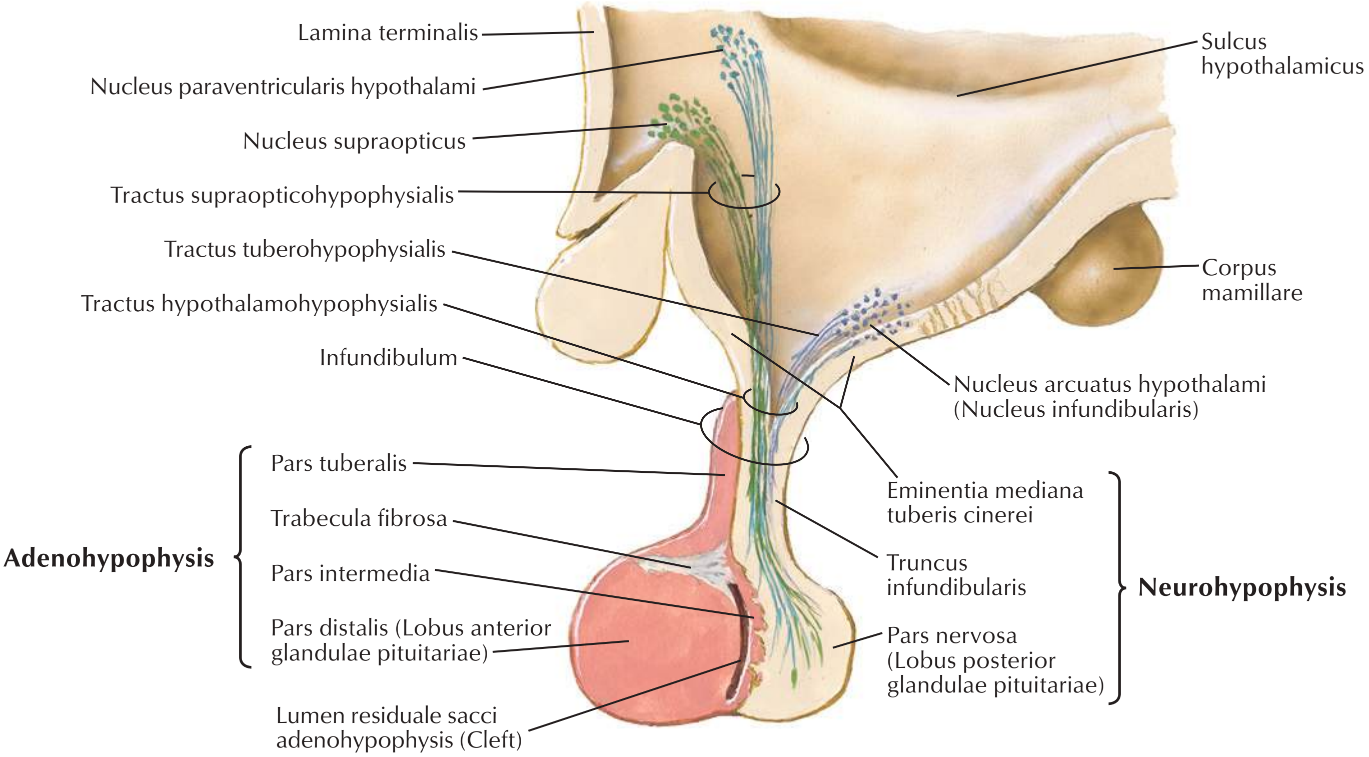

V. anterior cerebri
V. media superficialis cerebri (draining to Sinus sphenoparietalis)
V. media profunda cerebri
Crus cerebri
V. basalis (of Rosenthal)
Corpus geniculatum laterale
Corpus geniculatum mediale
Pulvinar thalami
Splenium corporis callosi
V. magna cerebri (Galeni)
V. uncalis
Chiasma opticum
Vv. inferiores cerebri
V. anastomotica inferior (of Labbé)

Inferior view

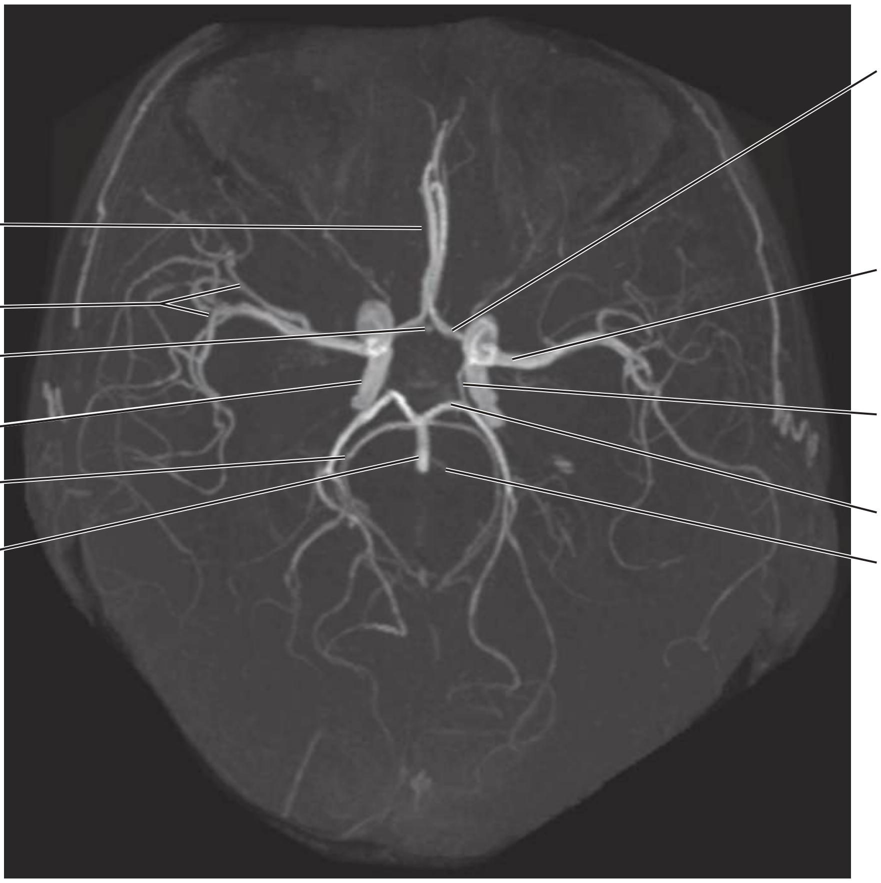
Subependymal Veins of Brain


Vv. posteriores septi pellucidi
Vv. thalamicae superiores
V. chorioidea superior
V. transversa nuclei caudati
V. thalamostriata superior
Ventriculus lateralis
V. anterior nuclei caudati
V. anterior septi pellucidi
Genu corporis callosi
V. directa lateralis
V. posterior nuclei caudati (posterior part of V. thalamostriata superior)
Vv. internae dex. and sin. cerebri
V. medialis ventriculi lateralis
V. lateralis ventriculi lateralis
Splenium corporis callosi
V. magna cerebri (Galeni)
R. dorsalis corporis callosi
Sinus sagittalis inferior
V. occipitalis interna
Sinus rectus
Cornu occipitale (Cornu posterius) ventriculi lateralis
Foramen interventriculare (Monroi)
Commissura anterior
Adhaesio interthalamica
V. anterior cerebri
Chiasma opticum
Ventriculus tertius
V. media profunda cerebri
Vv. thalamostriatae inferiores
V. basalis (of Rosenthal)
Cornu temporale (Cornu inferius) ventriculi lateralis
V. mesencephalica posterior
V. hippocampi; V. ventricularis inferior
Aquaeductus cerebri
Ventriculus quartus
Aperturae mediana and lateralis ventriculi quarti
Cerebellum
V. superior vermis
Veins on lateral wall of ventricle
Veins on medial wall and floor of ventricle
All other veins

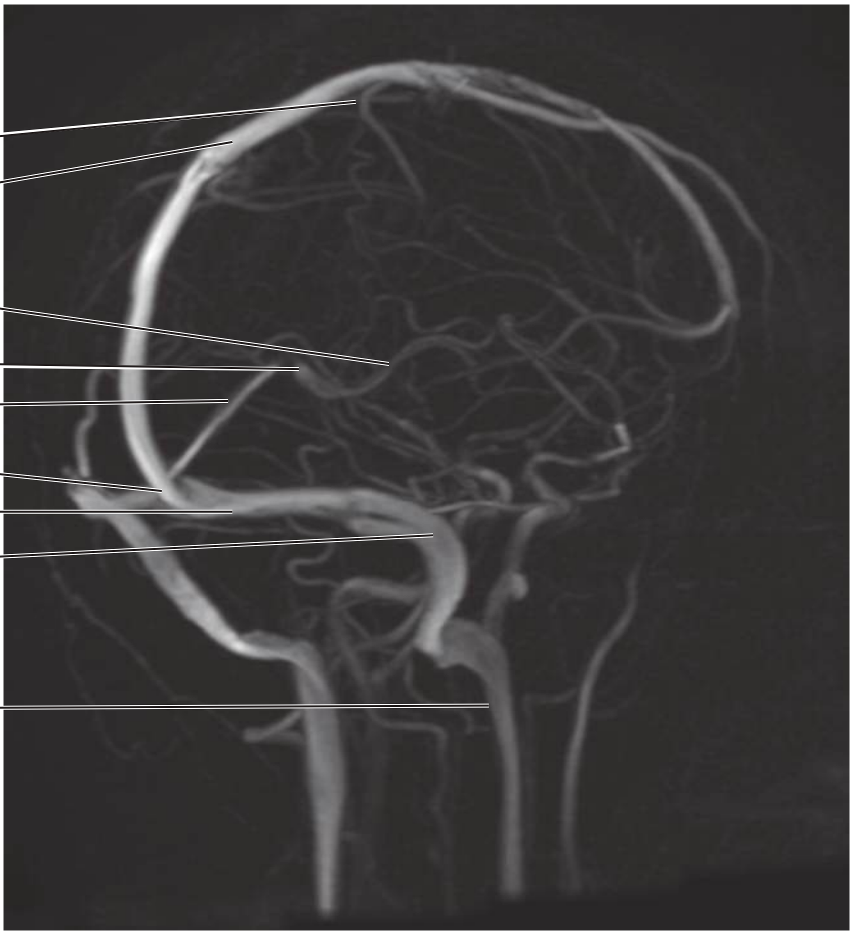

Septum pellucidum
Thalamus
Fornix
Adhaesio interthalamica
Sulcus hypothalamicus
Commissura anterior
Nuclei principales hypothalami
paraventricularis
posterior
dorsomedialis
supraopticus
ventromedialis
arcuatus
Nuclei mamillares
Chiasma opticum
Infundibulum
Hypophysis (Glandula pituitaria)
Tractus mamillothalamicus (Vicq d'Azyri)
Aquaeductus cerebri
Fasciculus longitudinalis dorsalis and other descending pathways
F. Netter M.D.


Lamina terminalis
Nucleus paraventricularis hypothalami
Nucleus supraopticus
Tractus supraopticohypophysialis
Tractus tuberohypophysialis
Tractus hypothalamohypophysialis
Infundibulum
Adenohypophysis
Pars tuberalis
Trabecula fibrosa
Pars intermedia
Pars distalis (Lobus anterior glandulae pituitariae)
Lumen residuale sacci adenohypophysis (Cleft)
Sulcus hypothalamicus
Corpus mamillare
Nucleus arcuatus hypothalami (Nucleus infundibularis)
Eminentia mediana tuberis cinerei
Truncus infundibularis
Pars nervosa (Lobus posterior glandulae pituitariae)
Neurohypophysis

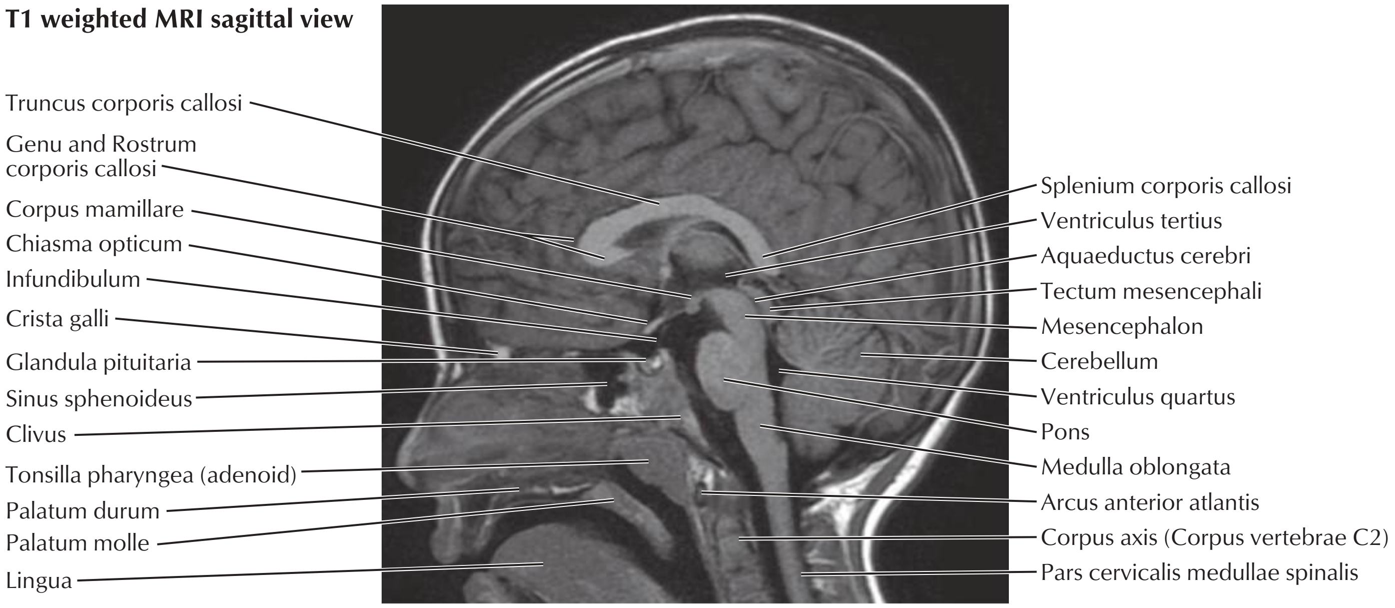
Magnetic resonance angiography (MRA) circle of Willis (3D time of flight without contrast)


Segmentum A2
a. anterioris cerebri
Segmenta M2
a. mediae cerebri
A. communicans anterior
A. interna carotidis
A. superior cerebelli
A. basilaris
Segmentum A1
a. anterioris cerebri
Segmentum M1
a. mediae cerebri
A. communicans posterior
A. posterior cerebri
A. inferior anterior cerebelli

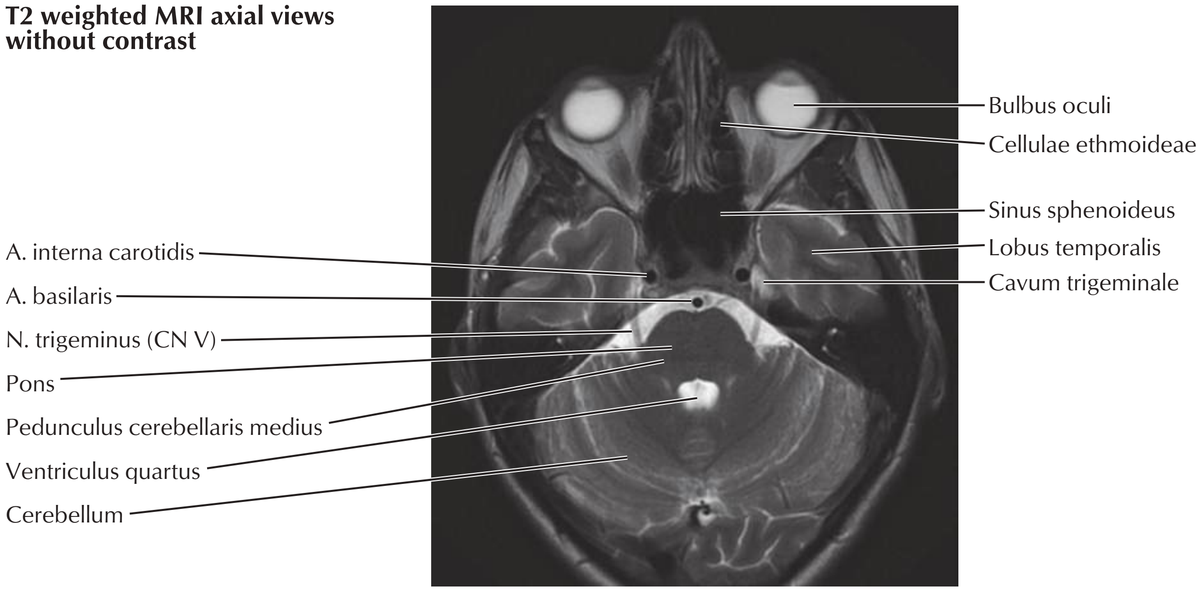
Magnetic resonance venography (MRV) (2D time of flight without contrast)

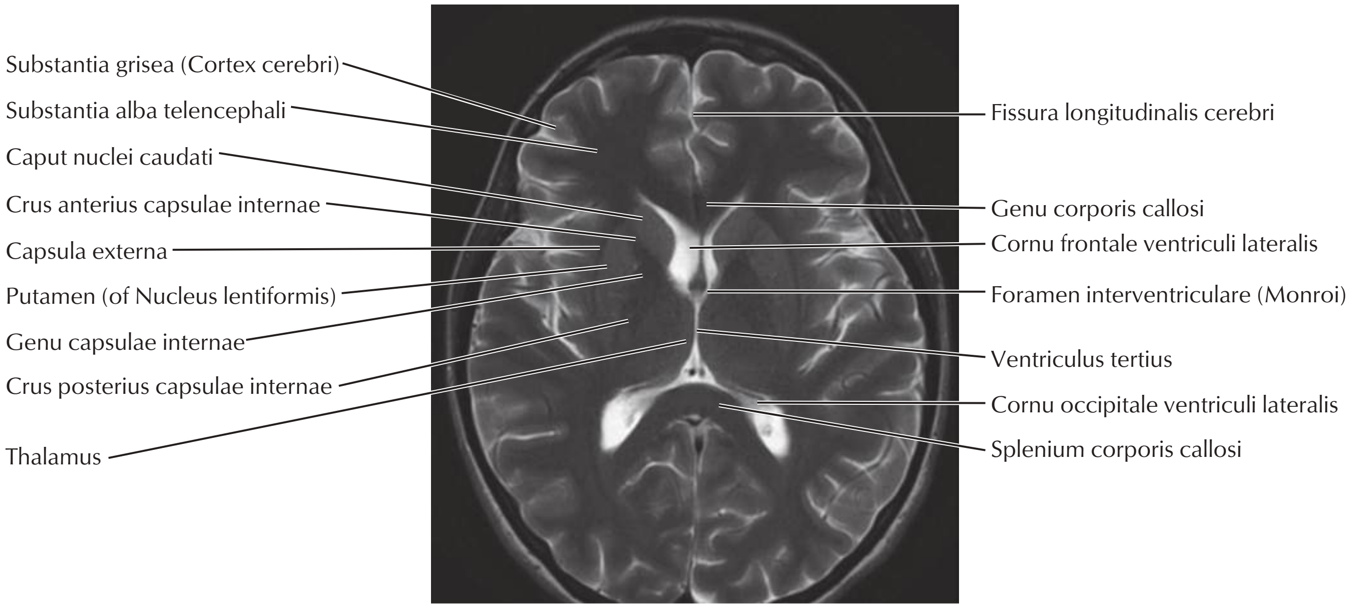

V. superior cerebri
Sinus sagittalis superior
V. interna cerebri
V. magna cerebri (Galeni)
Sinus rectus
Confluens sinuum
Sinus transversus
Sinus sigmoideus
V. jugularis interna

T1 weighted MRI sagittal view


Truncus corporis callosi
Genu and Rostrum corporis callosi
Corpus mamillare
Chiasma opticum
Infundibulum
Crista galli
Glandula pituitaria
Sinus sphenoideus
Clivus
Tonsilla pharyngea (adenoid)
Palatum durum
Palatum molle
Lingua
Splenium corporis callosi
Ventriculus tertius
Aquaeductus cerebri
Tectum mesencephali
Mesencephalon
Cerebellum
Ventriculus quartus
Pons
Medulla oblongata
Arcus anterior atlantis
Corpus axis (Corpus vertebrae C2)
Pars cervicalis medullae spinalis

T2 weighted MRI axial views without contrast


Bulbus oculi
Cellulae ethmoideae
Sinus sphenoideus
Lobus temporalis
Cavum trigeminale
A. interna carotidis
A. basilaris
N. trigeminus (CN V)
Pons
Pedunculus cerebellaris medius
Ventriculus quartus
Cerebellum


Substantia grisea (Cortex cerebri)
Substantia alba telencephali
Caput nuclei caudati
Crus anterius capsulae internae
Capsula externa
Putamen (of Nucleus lentiformis)
Genu capsulae internae
Crus posterius capsulae internae
Thalamus
Fissura longitudinalis cerebri
Genu corporis callosi
Cornu frontale ventriculi lateralis
Foramen interventriculare (Monroi)
Ventriculus tertius
Cornu occipitale ventriculi lateralis
Splenium corporis callosi

Structures with High* Clinical Significance

ANATOMIC STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA SKELETALE		
Orbita	Direct trauma to eye may result in "blowout" fracture; margo orbitalis remains intact, but parietes medialis and/or inferior have fractured	11, 50
Pterion	Weak area of cranium that is common site of fracture	13
Articulatio temporomandibularis	Temporomandibular disorders are common sourc of pain and joint dysfunction	25
Vertebrae cervicales	Degenerative changes cause narrowing of foramina intervertebrales that may cause cervical radiculopathy	26–28
Vertebrae cervicales	Bilateral fracture of partes interarticulares of C2 (spondylolysis) results from hyperextension of head on neck and results in spondylolisthesis of C2 (hangman's fracture); fractures (common) are due to motor vehicle, snowmobile, and all-terrain vehicle accidents	26
Cartilagines thyreoidea and cricoidea	Palpable landmarks used for cricothyrotomy and tracheostomy	87, 90
Ossicula auditus	Pathologic conditions involving the ossicula (e.g., otosclerosis) can cause conductive hearing loss	105, 106
SYSTEMA MUSCULARE		
Mm. superficiales capitis (Mm. faciales)	Used to assess function of CN VII during examination of Nn. craniales; may become weak or paralyzed with CN VII dysfunction (e.g., Bell's palsy)	31, 134
M. sternocleidomastoideus	Palpated to identify "nerve point of neck" for administration of anesthesia to plexus cervicalis	39
Mm. sternocleidomastoideus and trapezius	Used to assess function of CN XI during examination of Nn. craniales	39, 138
Mm. masticatorii	Used to assess function of CN V (V_3) during examination of Nn. craniales	55, 56
Levator veli palatini; M. uvulae	Used to assess function of CN X during examination of Nn. craniales; contralateral deviation of uvula during elevation indicates CN X dysfunction	67
M. genioglossus	Used to assess CN XII function during examination of Nn. craniales; tongue deviates to side of lesion when protruded following CN XII injury	70, 139
Levator palpebrae superioris; M. tarsalis superior	Muscles responsible for elevating eyelid; ptosis indicates pathologic change in CN III or sympathetics (M. tarsalis superior)	94, 96
Mm. externi bulbi oculi	Used to assess function of CN III, CN IV, and CN VI during examination of Nn. craniales	96, 98
Dilatator pupillae	Important in assessment of sympathetic function in head; lack of dilation indicates interruption in sympathetic outflow (e.g., Horner's syndrome)	101, 132
Sphincter pupillae	Involved in pupillary light reflex and accommodation reflex	101, 132
SYSTEMA RESPIRATORIUM		
Sinus paranasales	Cavities in cranium; prone to inflammation of tunica mucosa due to bacterial or viral infection	49, 50
SYSTEMA DIGESTORIUM		
Glandula parotidea	Swelling of gland due to infection (e.g., mumps) may compress branches of N. facialis, producing weakness of Mm. faciales	53, 54

ANATOMIC STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA ENDOCRINUM		
Glandula thyreoidea	Common site of cancer; removed with thyroidectomy	87
SYSTEMA NERVOSUM		
N. accessorius (CN XI)	Lymph node biopsy in trigonum posterius colli can cause iatrogenic injury of CN XI	39
Plexus cervicalis	Blocks of plexus cervicalis are performed for neck procedures	39, 40
N. trigeminus (CN V)	Branches of CN V are anesthetized for procedures on face or scalp	42, 133
N. olfactorius (CN I)	One of most commonly injured Nn. craniales; can be avulsed at lamina cribrosa following falls	46, 130
N. facialis (CN VII)	Idiopathic unilateral palsy of N. facialis (Bell's palsy) can result in inability to fully close eye and result in desiccated cornea ipsilaterally	54
N. laryngeus recurrens	May be compressed or damaged by procedures in neck (e.g., thyroidectomy), aneurysm of arcus aortae, or lung cancer, producing hoarseness of voice	88, 89
Nn. oculomotorius, trochlearis, and abducens (CN III, IV, VI)	Thrombosis of sinus cavernosus can result in dysfunction of Mm. externi bulbi oculi caused by compression of one, two, or all three nerves	115
Colliculus superior; Aquaeductus cerebri	Tumor of mesencephalon can result in compression of aquaeductus cerebri, with resultant hydrocephalus	120
N. opticus (CN II)	One early sign of growing mass in hypophysis (glandula pituitaria) is bitemporal hemianopsia	131, 151
N. opticus (CN II)	One of first signs of aneurysm of A. ophthalmica is visual loss due to compression of overlying N. opticus	148
SYSTEMA CARDIOVASCULARE		
Vv. jugulares interna dextra and externa dextra	Examined to assess jugular venous pulse; V. jugularis interna is preferred because it is in line with V. cava superior; V. jugularis externa may be used instead as the V. jugularis interna is very difficult to visualize	38
Vv. jugularis interna and subclavia	Used to obtain venous access via insertion of central venous catheter	38, 84
A. thyreoidea inferior	At risk during thyroidectomy; must be preserved to maintain blood supply to glandulae parathyreoideae	40, 88
A. communis carotidis	Palpated in neck to assess carotid pulse; prone to atherosclerotic thickening of vessel wall	41
Aa. ethmoidea anterior, sphenopalatina, and facialis	Anastomosis site of these vessels in vestibulum nasi is common site of nosebleed (epistaxis)	47
Plexus (venosus) pterygoideus	Common route for spread of infection due to connections between face, orbit, and venous sinuses	84, 99
A. ophthalmica	Primary source of blood to retina; blindness may occur if artery is occluded	99, 103
Aa. epicraniales	Lacerations bleed profusely owing to rich blood supply; vessels do not retract in dense connective tissue layer of scalp	111
Vv. superiores cerebri	May be torn from their junction with sinus sagittalis superior, producing subdural hematoma	112, 113, 114, 120

ANATOMIC STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA CARDIOVASCULARE—Continued		
A. meningea media	Trauma to cranium can tear A. meningea media, causing epidural hematoma	112
Sinus durae matris	Infections in head may spread to sinuses, causing dural sinus thrombosis; sinus cavernosus is most common site	114, 115
Sinus cavernosus	Fistula (anastomosis) between A. interna carotidis and sinus cavernosus may form, especially following trauma	115, 151
Sinus carotidis	Compressed during carotid sinus massage	141
Circulus arteriosus cerebri (Willisii)	Common site of aneurysms; rupture produces subarachnoid hemorrhage	150
SYSTEMA LYMPHATICUM		
Ductus thoracicus	May be injured in neck at junction of Vv. jugularis interna and subclavia	85
Nodi profundi superiores and inferiores	Palpated during neck examination to assess size	85, 86

*Selections were based largely on clinical data and commonly discussed clinical correlations in gross anatomy courses.

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Mm. arytenoidei transversus and obliquus	Mm. laryngis	Cartilago arytenoidea	Opposite cartilago arytenoidea	N. laryngeus recurrens	Aa. thyreoideae superior and inferior	Closes intercartilaginous portion of rima glottides
M. auricularis anterior	Auris externa	Fascia temporalis; Aponeurosis epicranialis	Anterior part of facies medialis helicis auriculae	Rr. auricularis posterior and temporales n. facialis	R. auricularis a. auricularis posterioris; R. parietalis a. temporalis superficialis	Elevates and draws auricle forward
M. auricularis posterior	Auris externa	Base of proc. mastoideus	Lower part of facies medialis auriculae	Rr. auricularis posterior and temporales n. facialis	R. auricularis a. auricularis posterioris; R. parietalis a. temporalis superficialis	Retracts and elevates auricle
M. auricularis superior	Auris externa	Fascia temporalis; Aponeurosis epicranialis	Upper part of facies medialis auriculae	Rr. auricularis posterior and temporales n. facialis	R. auricularis a. auricularis posterioris; R. parietalis a. temporalis superficialis	Retracts and elevates auricle
Bucinator (Buccinator)	Mm. faciales	Posterior portion of procc. alveolares maxillae and mandibulae, opposite alveoli dentales molares; Anterior border of raphe pterygomandibularis	Angulus oris	Rr. buccales n. facialis	Rr. musculares a. facialis; R. buccalis a. maxillaris	Compresses cheeks, expels air between lips, aids in mastication
M. ciliaris	Mm. interni bulbi oculi	Limbus cornea (Junctio corneoscleralis)	Corpus ciliare	Fibrae parasympathicae via nn. ciliares breves (CN III)	A. ophthalmica	Constricts ciliary body and lens rounds up (accommodation)
Constrictor inferior pharyngis	Mm. circulares pharyngis	Linea obliqua cartilaginis thyreoideae; Cartilago cricoidea	Raphe pharyngis	N. vagus via plexus pharyngeus	A. pharyngea ascendens; Rr. a. thyreoideae superioris	Constricts wall of pharynx during swallowing
Constrictor medius pharyngis	Mm. circulares pharyngis	Lig. stylohyoideum; Cornua ossis hyoidei	Raphe pharyngis	N. vagus via plexus pharyngeus	A. pharyngea ascendens; Rr. palatinus ascendens and tonsillaris a. facialis; Rr. dorsales linguae a. lingualis	Constricts wall of pharynx during swallowing
Constrictor superior pharyngis	Mm. circulares pharyngis	Hamulus pterygoideus; Raphe pterygomandibularis; Linea mylohyoidea mandibulae	Raphe pharyngis	N. vagus via plexus pharyngeus	A. pharyngea ascendens; Rr. palatinus ascendens and tonsillaris a. facialis; Rr. dorsales a. lingualis	Constricts wall of pharynx during swallowing
Corrugator supercilii	Mm. faciales	Medial part of margo supraorbitalis	Cutis of medial half of supercilium	Rr. zygomatici and temporales n. facialis	Rr. zygomatici and anteriores a. temporalis superficialis	Draws eyebrows downward and medially, produces wrinkles of skin between eyebrows
M. cricoarytenoideus lateralis	Mm. laryngis	Arcus cartilaginis cricoideae	Proc. muscularis cartilaginis arytenoideae	N. laryngeus recurrens	Aa. thyreoideae superior and inferior	Adducts vocal folds
M. cricoarytenoideus posterior	Mm. laryngis	Facies posterior laminae cartilaginis cricoideae	Proc. muscularis cartilaginis arytenoideae	N. laryngeus recurrens	Aa. thyreoideae superior and inferior	Abducts vocal folds
M. cricothyreoideus	Mm. laryngis	Pars anterior cartilaginis cricoideae	Margo inferior and cornu inferior cartilaginis thyreoideae	R. externus n. laryngei superioris	Aa. thyreoideae superior and inferior	Lengthens and tenses vocal ligaments

Variations in spinal nerve contributions to the innervation of muscles, their arterial supply, their attachments, and their actions are common themes in human anatomy. Therefore, expect differences between texts and realize that anatomical variation is normal.

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Depressor anguli oris	Mm. faciales	Continuous with platysma on linea obliqua mandibulae	Angulus oris, into m. orbicularis oris and cutis	Rr. marginalis mandibularis and buccales n. facialis	A. labialis inferior (branch of a. facialis)	Depresses angle of mouth
Depressor labii inferioris	Mm. faciales	Facies externa mandibulae, between symphysis and foramen mentale, deep to depressor anguli oris	Cutis labii inferioris, mingling with m. orbicularis oris, medial fibers joining those of opposite side	Rr. marginalis mandibularis and buccales n. facialis	A. labialis inferior (branch of a. facialis)	Depresses lower lip and draws it lateralward
Depressor septi nasi	Mm. faciales	Fossa incisiva maxillarum	Septum nasi; Posterior part of ala nasi	Rr. zygomatici and buccales n. facialis	A. labialis superior (branch of a. facialis)	Narrows nostril, draws septum downward
M. digastricus	Mm. suprahyoidei	*Venter anterior*: Fossa digastrica mandibulae *Venter posterior*: Incisura mastoidea ossis temporalis	Tendo intermedius attached to corpus ossis hyoidei	*Venter anterior*: N. mylohyoideus (branch of n. mandibularis) *Venter posterior*: N. facialis (CN VII)	*Venter anterior*: A. submentalis *Venter posterior*: Rr. musculares aa. auricularis posterioris and occipitalis	Raises hyoid bone and base of tongue, steadies hyoid bone, opens mouth by lowering mandible
Dilatator pupillae	Mm. interni bulbi oculi	Fibrae radiales iridis	Blends with fibers of sphincter pupillae	Fibrae sympathicae from g. cervicale superius	A. ophthalmica	Dilates pupil
M. frontalis (Venter frontalis m. occipitofrontalis)	Mm. faciales	Aponeurosis epicranialis, at level of sutura coronalis	Cutis regionis frontalis; Aponeurosis epicranialis	Rr. temporales n. facialis	R. frontalis a. temporalis superficialis	Horizontally wrinkles skin of forehead, raises eyebrows
M. genioglossus	Mm. externi linguae	Spina mentalis superior mandibulae	Dorsum linguae; Os hyoideum	N. hypoglossus (CN XII)	Aa. sublingualis and submentalis	Depresses and protrudes tongue
M. geniohyoideus	Mm. suprahyoidei	Spina mentalis inferior mandibulae	Facies anterior corporis ossis hyoidei	R. anterior n. C1 through n. hypoglossus (CN XII)	R. sublingualis a. lingualis	Elevates hyoid bone and depresses mandible
M. hyoglossus	Mm. externi linguae	Corpus and cornu major ossis hyoidei	Margo and facies inferior linguae	N. hypoglossus (CN XII)	Aa. sublingualis and submentalis	Depresses and retracts tongue
M. longitudinalis inferior linguae	Mm. interni linguae	Facies inferior linguae, between mm. genioglossus and hyoglossus	Apex linguae, blending with m. styloglossus	N. hypoglossus (CN XII)	R. produndus linguae a. lingualis; Rr. a. facialis	Shortens tongue, turns tip and sides downward
M. longitudinalis superior linguae	Mm. interni linguae	Tela submucosa partis posterioris dorsi linguae	Apex linguae, unites with muscle of opposite side	N. hypoglossus (CN XII)	R. profundus linguae a. lingualis; Rr. a. facialis	Shortens tongue, turns tip and sides upward
Levator anguli oris	Mm. faciales	Fossa canina maxillae, immediately below foramen infraorbitalis and under cover of caput zygomaticum levatoris labii superioris	Angulus oris, fibers intermingle with m. orbicularis oris, depressor anguli oris, and mm. zygomatici	Rr. zygomatici and buccales n. facialis	A. labialis superior (branch of a. facialis)	Elevates angle of mouth
Levator labii superioris	Mm. faciales	Maxilla, above foramen infraorbitale	Cutis labii superioris oris	Rr. zygomatici and buccales n. facialis	Aa. labialis superior and angularis (branches of a. facialis)	Elevates upper lip, dilates nares
Levator nasolabialis (Levator labii superioris alaeque nasi)	Mm. faciales	Upper part of proc. frontalis maxillae	Cartilago alaris major; Cutis nasi; Pars lateralis labii superioris oris	Rr. zygomatici and buccales n. facialis	Aa. labialis superior and angularis (branches of a. facialis)	Elevates upper lip and dilates nostril
Levator palpebrae superioris	Mm. externi bulbi oculi (Mm. palpebrae)	Ala minor ossis sphenoidei, anterior to canalis opticus	Tarsus superior	R. superior n. oculomotorii (CN III)	A. ophthalmica	Raises upper eyelid
Levator veli palatini	Mm. palati mollis	Pars petrosa ossis temporalis; Tuba auditiva (Eustachii)	Aponeurosis palatina	N. vagus via plexus pharyngeus	A. palatina ascendens (branch of a. facialis); A. palatina descendens (branch of a. maxillaris)	Elevates soft palate during swallowing

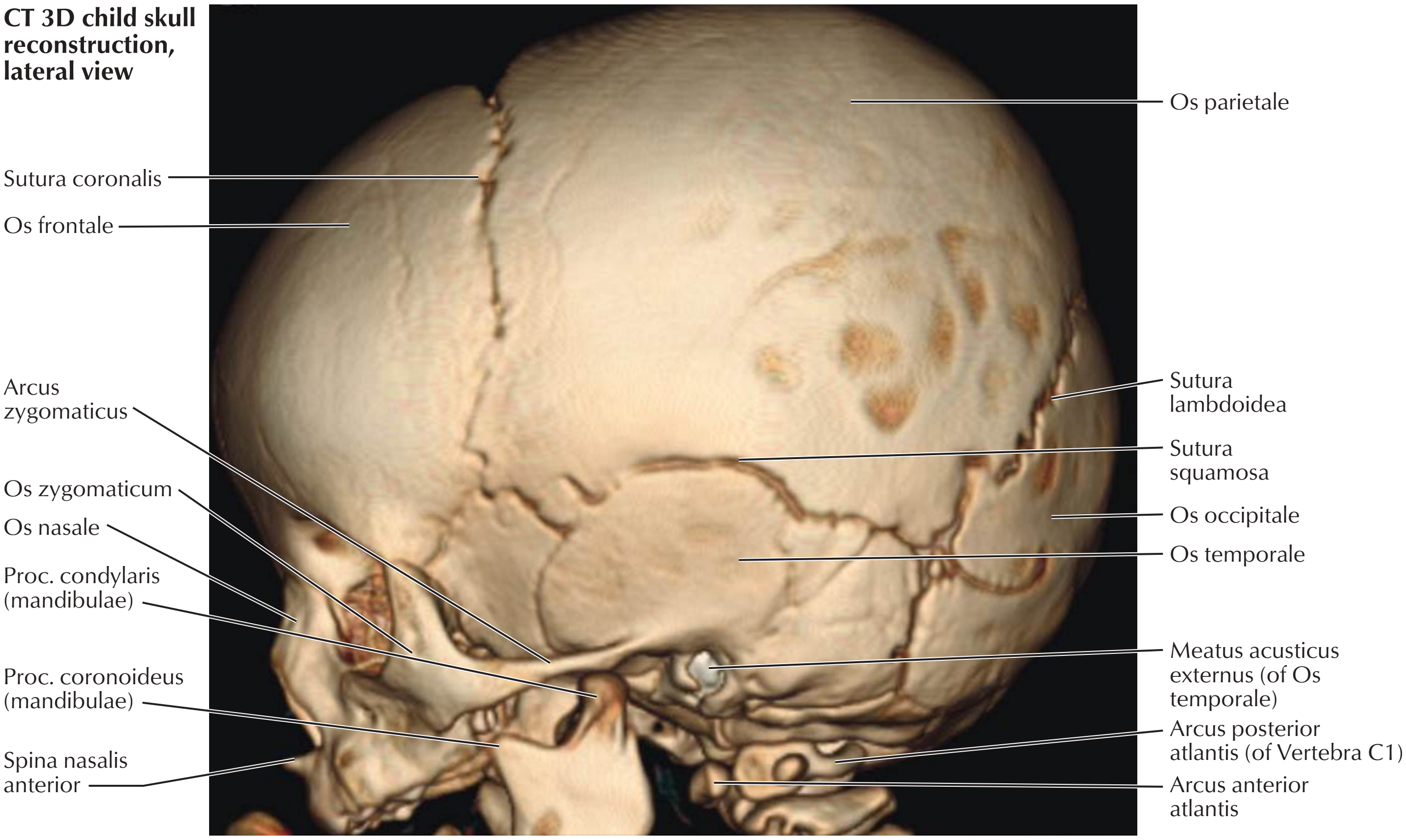
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. longus capitis	Mm. vertebrales anteriores	Tubercula anteriora [procc. transversorum] vertebrarum C3–C6	Inferior surface of pars basilaris ossis occipitalis	Rr. anteriores nn. cervicalium (C1–C3)	R. cervicalis ascendens a. thyreoideae inferioris; A. pharyngea ascendens; Rr. musculares a. vertebralis	Flexes head
M. longus colli	Mm. vertebrales anteriores	*Pars verticalis*: Vertebrae C5–T3 *Pars obliqua inferior*: Vertebrae T1–T3 *Pars obliqua superior:* Tubercula anteriora [procc. transversorum] vertebrarum C3–C5	*Pars verticalis*: Vertebrae C2–C4 *Pars obliqua inferior:* Tubercula anteriora [procc. transversorum] vertebrarum C3–C6 *Pars obliqua superior:* Tuberculum anterius [arcus anterioris] atlantis	Rr. anteriores nn. cervicalium (C2–C8)	Rr. prevertebrales a. pharyngeae ascendentis; Rr. musculares aa. cervicalis ascendentis and vertebralis	*Bilaterally*: flex and assist in rotating cervical vertebrae and head *Unilaterally*: flexes vertebral column laterally
Masseter	Mm. masticatorii	Arcus zygomaticus	Ramus mandibulae; Proc. coronoideus	N. massetericus (branch of n. mandibularis)	A. transversa faciei; R. massetericus a. maxillaris; A. facialis	Elevates and protrudes mandible; deep fibers retract it
M. obliquus inferior	Mm. externi bulbi oculi	Anterior part of paries inferior orbitae, lateral to canalis nasolacrimalis	Pars lateralis sclerae, deep to m. rectus lateralis	R. inferior n. oculomotorii (CN III)	A. ophthalmica	Abducts, elevates, and laterally rotates eyeball
M. obliquus superior	Mm. externi bulbi oculi	Corpus ossis sphenoidei (above canalis opticus), medial to origin of m. rectus superior	Passes through trochlea, attaches to facies superior sclerae, between mm. recti superior and lateralis	N. trochlearis (CN IV)	A. ophthalmica	Abducts, depresses, and medially rotates eyeball
M. mentalis	Mm. faciales	Fossa incisiva mandibulae	Cutis menti	R. marginalis mandibularis n. facialis	A. labialis inferior (branch of a. facialis)	Raises and protrudes lower lip
M. mylohyoideus	Mm. suprahyoidei	Linea mylohyoidea mandibulae	Raphe mediana mylohyoidea; Corpus ossis hyoidei	N. mylohyoideus (branch of n. mandibularis)	R. sublingualis a. lingualis; R. submentalis a. facialis	Elevates hyoid bone, base of tongue, floor of mouth; depresses mandible
M. nasalis	Mm. faciales	Eminentia canina, above and lateral to fossa incisiva maxillarum	Aponeurosis on cartilagines nasi	Rr. zygomatici and buccales n. facialis	Rr. labialis superior, septi nasi, and lateralis nasi a. facialis	Draws ala of nose toward nasal septum, compresses nostrils; alar part opens nostrils
M. occipitalis (Venter occipitalis m. occipitofrontalis)	Mm. faciales	Lateral 2/3 of linea nuchalis superior; Proc. mastoideus	Cutis regionis occipitalis; Aponeurosis epicranialis	N. auricularis posterior (branch of n. facialis)	R. occipitalis a. auricularis posterioris; R. descendens a. occipitalis	Moves scalp backward
M. omohyoideus	Mm. infrahyoidei	*Venter inferior*: Margo superior scapulae; Lig. transversum superius scapulae *Venter superior*: Tendo intermedius	*Venter inferior*: Tendo intermedius *Venter superior*: Corpus ossis hyoidei	Ansa cervicalis	R. hyoideus a. lingualis; R. sternocleidomastoideus a. thyreoideae superioris	Steadies hyoid bone and depresses hyoid
M. orbicularis oculi	Mm. faciales	Margo orbitalis medialis; Lig. palpebrale mediale; Os lacrimale	Cutis periorbitae; Lig. palpebrale laterale; Palpebrae superior and inferior	N. facialis (CN VII)	Aa. facialis and temporalis superficialis	Closes eyelids
M. orbicularis oris	Mm. faciales	Maxilla, above dentes incisivi	Cutis around labia oris	Rr. zygomatici, buccales, and marginalis mandibularis n. facialis	Aa. labiales inferior and superior (branches of a. facialis)	Compression, contraction, and protrusion of lips

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. palatoglossus	Mm. palati mollis	Aponeurosis palatina of palatum molle	Margo linguae	N. vagus via plexus pharyngeus	A. pharyngea ascendens; Rr. palatini aa. facialis and maxillaris	Elevates posterior tongue, depresses palate
M. palatopharyngeus	Mm. longitudinales pharyngis	Palatum durum; superior Aponeurosis palatina	Paries lateralis pharyngis	N. vagus via plexus pharyngeus	A. palatina ascendens (branch of a. facialis); A. palatina descendens (branch of a. maxillaris)	Tenses soft palate; pulls walls of pharynx superiorly, anteriorly, and medially during swallowing
M. pterygoideus lateralis	Mm. masticatorii	*Caput superius*: Facies infratemporalis alae majoris ossis sphenoidei *Caput inferius*: Lamina lateralis proc. pterygoidei	Fovea pterygoidea mandibulae; Capsula articularis temporomandibularis; Discus articularis	N. mandibularis (CN V_3)	Rr. musculares a. maxillaris	*Bilaterally*: protrudes mandible *Unilaterally and alternately*: produces side-to-side grinding
M. pterygoideus medialis	Mm. masticatorii	Medial surface of lamina lateralis proc. pterygoidei; Proc. pyramidalis ossis palatini; Tuber maxillae	Medial surface of ramus and angulus mandibulae, inferior to foramen mandibulae	N. pterygoideus medialis (branch of n. mandibularis)	Aa. facialis and maxillaris	*Bilaterally*: protrudes and elevates mandible *Unilaterally and alternately*: produces side-to-side movements
Platysma	Mm. faciales	Cutis regionis infraclavicularis (thoracis)	Mandibula; Mm. orales	N. facialis (CN VII)	Aa. submentalis and suprascapularis	Tenses skin of neck
M. procerus	Mm. faciales	Fascia covering pars inferior ossis nasalis and pars superior cartilaginis lateralis nasi	Cutis medial to and above supercilium	Rr. temporales and zygomatici n. facialis	Rr. angularis and lateralis nasi a. facialis	Draws down medial angle of eyebrows, produces transverse wrinkles over bridge of nose
M. rectus anterior capitis	Mm. vertebrales anteriores	Massa lateralis atlantis	Pars basilaris ossis occipitalis, in front of foramen magnum	Rr. anteriores nn. cervicalium (C1–C2)	Rr. musculares a. vertebralis; A. pharyngea ascendens	Flexes head
M. rectus inferior	Mm. externi bulbi oculi	Anulus tendineus communis	Facies inferior bulbi oculi, posterior to limbus corneae	R. inferior n. oculomotorii (CN III)	A. ophthalmica	Depresses, adducts, and laterally rotates eyeball
M. rectus lateralis	Mm. externi bulbi oculi	Anulus tendineus communis	Facies lateralis bulbi oculi, posterior to limbus corneae	N. abducens (CN VI)	A. ophthalmica	Abducts eyeball
M. rectus lateralis capitis	Mm. vertebrales anteriores	Upper surface of proc. transversus atlantis	Inferior surface of proc. jugularis ossis occipitalis	Rr. anteriores nn. cervicalium (C1–C2)	Rr. musculares a. vertebralis; Aa. occipitalis and pharyngea ascendens	Flexes head laterally to same side
M. rectus medialis	Mm. externi bulbi oculi	Anulus tendineus communis	Facies medialis bulbi oculi, posterior to limbus corneae	R. inferior n. oculomotorii (CN III)	A. ophthalmica	Adducts eyeball
M. rectus superior	Mm. externi bulbi oculi	Anulus tendineus communis	Facies superior bulbi oculi, posterior to the limbus corneae	R. superior n. oculomotorius (CN III)	A. ophthalmica	Elevates, adducts, and medially rotates eyeball
M. risorius	Mm. faciales	Fascia masseterica, superficial to platysma	Cutis anguli oris	Rr. zygomatici and buccales n. facialis	A. labialis superior (branch of a. facialis)	Retracts angle of mouth

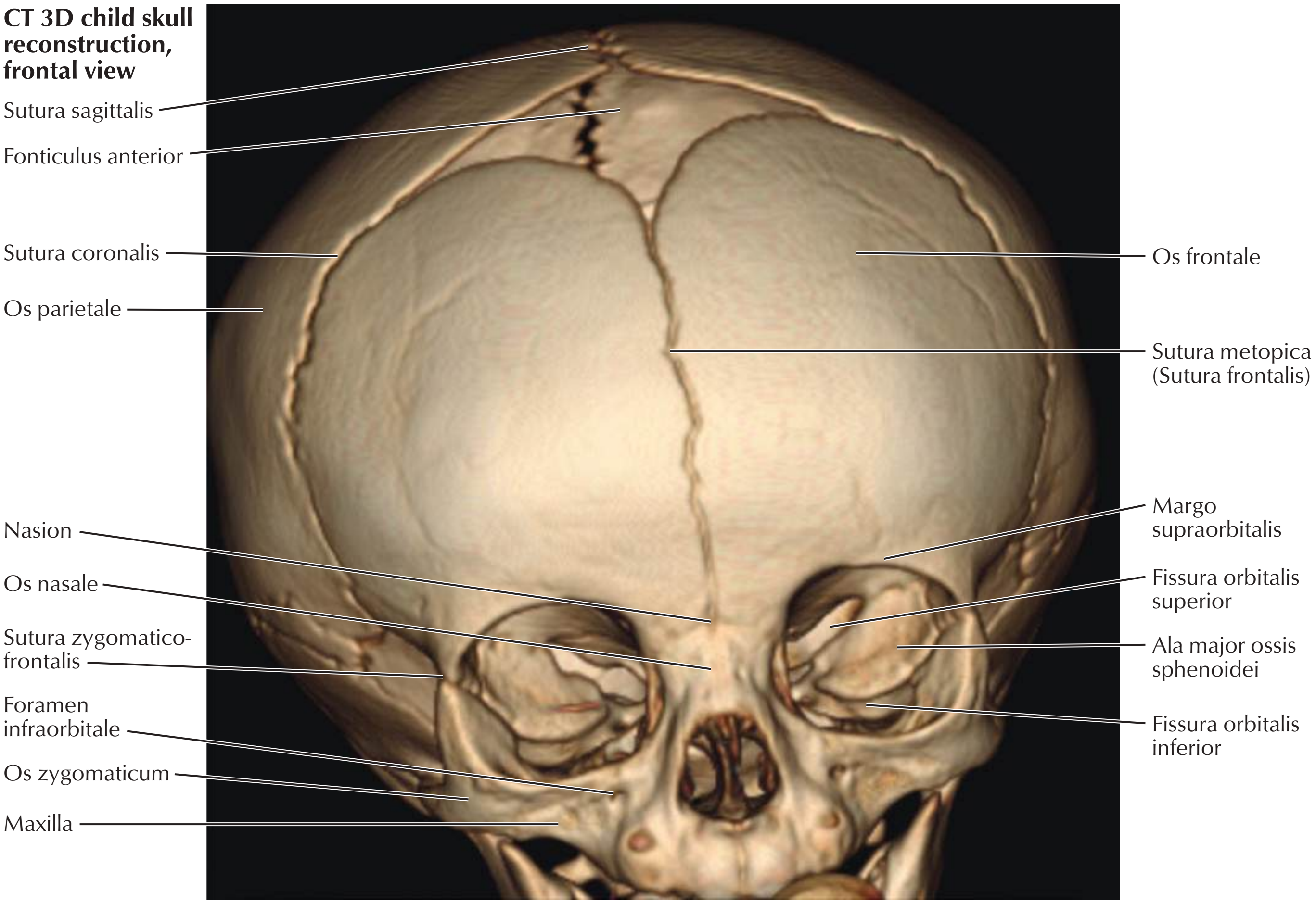
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. salpingopharyngeus	Mm. longitudinales pharyngis	Tuba auditiva (Eustachii)	Paries lateralis pharyngis	N. vagus via plexus pharyngeus	R. pharyngeus a. pharyngeae ascendentis	Elevates pharynx and larynx during swallowing and speaking
M. scalenus anterior	Mm. vertebrales laterales	Tubercula anteriora [procc. transversorum] vertebrarum C3–C6	Tuberculum scalenum costae 1	Rr. anteriores nn. cervicalium (C5–C8)	R. cervicalis ascendens a. thyreoideae inferioris	Elevates 1st rib, bends neck
M. scalenus medius	Mm. vertebrales laterales	Tubercula posteriora [procc. transversorum] vertebrarum C2–C7	Facies superior costae 1, behind sulcus subclavius	Rr. anteriores nn. cervicalium (C3–C7)	Rr. musculares a. cervicalis ascendentis	Elevates 1st rib, bends neck
M. scalenus posterior	Mm. vertebrales laterales	Tubercula posteriora [procc. transversorum] vertebrarum C4–C6	Facies externa costae 2	Rr. anteriores nn. cervicalium (C5-C8)	Rr. musculares a. cervicalis ascendentis (division of a. thyreoidea inferior); R. superficialis a. transversae colli	Elevates 2nd rib, bends neck
Sphincter pupillae	Mm. interni bulbi oculi	Musculus levis circularis iridis, passes around pupilla	Blends with fibers of dilator pupillae	Fibrae parasympathicae via n. oculomotorius (CN III)	A. ophthalmica	Constricts pupil
M. stapedius	Mm. auris mediae	Eminentia pyramidalis (cavitatis tympani) ossis temporalis	Stapes	N. facialis (CN VII)	Aa. auricularis posterior, tympanica anterior, and meningea media	Pulls stapes posteriorly to lessen oscillation of tympanic membrane
M. sternocleidomastoideus	Mm. colli	*Caput sternale*: Facies anterior manubrii sterni *Caput claviculare*: Medial 1/3 of facies superior claviculae	Lateral surface of proc. mastoideus; Lateral half of linea nuchalis superior ossis occipitalis	N. accessorius (CN XI)	Rr. sternocleidomastoidei aa. thyreoideae superioris and occipitalis; R. muscularis a. suprascapularis; R. occipitalis a. auricularis posterioris	*Bilaterally*: flexes head, raises thorax *Unilaterally*: turns face toward opposite side
M. sternohyoideus	Mm. infrahyoidei	Facies posterior manubrii sterni; Lig. sternoclaviculare posterius; Extremitas sternalis claviculae	Medial part of margo inferior corporis ossis hyoidei	Ansa cervicalis	Rr. sternocleidomastoideus and hyoideus a. thyreoideae superioris; R. hyoideus a. lingualis	Depresses larynx and hyoid bone, steadies hyoid bone
M. sternothyreoideus	Mm. infrahyoidei	Facies posterior manubrii sterni, below and deep to origin of m. sternohyoideus; Margo posterior cartilaginis costalis 1	Linea obliqua [laminae] cartilaginis thyreoideae	Ansa cervicalis	R. cricothyreoideus a. thyreoideae superioris	Depresses larynx and thyroid cartilage
M. styloglossus	Mm. externi linguae	Proc. styloideus; Lig. stylohyoideum	Margo and facies inferior linguae	N. hypoglossus (CN XII)	A. sublingualis	Retracts tongue and draws it up for swallowing
M. stylohyoideus	Mm. suprahyoidei	Margo posterior proc. styloidei	Corpus ossis hyoidei, at junction with cornu major	N. facialis (CN VII)	Rr. musculares aa. facialis and occipitalis	Elevates and retracts hyoid bone
M. stylopharyngeus	Mm. longitudinales pharyngis	Facies medialis proc. styloidei	Paries pharyngis	N. glossopharyngeus (CN IX)	A. pharygnea ascendens; Rr. palatinus ascendens and tonsillaris a. facialis; Rr. dorsales a. lingualis	Elevates pharynx and larynx during swallowing and speaking
M. subclavius	Mm. colli	Facies superior costae 1 and cartilaginis costalis 1	Middle third of facies inferior claviculae	N. subclavius (branch of plexus brachialis)	R. clavicularis a. thoracoacromialis	Anchors and depresses clavicle

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. temporalis	Mm. masticatorii	Fossa temporalis; Lamina profunda fasciae temporalis	Proc. coronoideus and ramus mandibulae	Nn. temporales profundi (branches of N. mandibularis)	Aa. temporalis superficialis and maxillaris; Aa. temporales profundae media, anterior, and posterior	Elevates mandible; posterior fibers retract mandible
Tensor tympani	Mm. auris mediae	Cartilago tubae auditivae (Eustachii)	Manubrium mallei	N. mandibularis (CN V_3)	R. tympanicus superior a. meningeae mediae (division of a. maxillaris)	Tenses tympanic membrane by drawing it medially
Tensor veli palatini	Mm. palati mollis	Fossa scaphoidea laminae medialis proc. pterygoidei; Spina ossis sphenoidei; Tuba auditiva (Eustachii)	Aponeurosis palatina	N. mandibularis (CN V_3)	A. palatina ascendens (branch of a. facialis); A. palatina descendens (branch of a. maxillaris)	Tenses soft palate, opens pharyngotympanic (auditory, eustachian) tube during swallowing and yawning
M. thyreoarytenoideus	Mm. laryngis	Facies interna cartilaginis thyreoideae	Proc. muscularis cartilaginis arytenoideae	N. laryngeus recurrens	Aa. thyreoideae superior and inferior	Shortens and relaxes vocal cords, sphincter of vestibule
M. thyreohyoideus	Mm. infrahyoidei	Linea obliqua [laminae] cartilaginis thyreoideae	Lower border of corpus and cornu major ossis hyoidei	R. thyreohyoideus n. spinalis C1 via n. hypoglossus (CN XII)	R. hyoideus a. thyreoideae superioris	Depresses larynx and hyoid bone, elevates larynx when hyoid bone is fixed
M. transversus linguae	Mm. interni linguae	Septum linguae	Dorsum and margo linguae	N. hypoglossus (CN XII)	R. profundus linguae a. lingualis; Rr. a. facialis	Narrows and elongates tongue
M. uvulae	Mm. palati mollis	Spina nasalis posterior ossis palatini; Aponeurosis palatina	Tunica mucosa uvulae palatinae	N. vagus via plexus pharyngeus	A. palatina ascendens (branch of a. facialis); A. palatina descendens (branch of a. maxillaris)	Shortens, elevates, and retracts uvula of the palate
M. verticalis linguae	Mm. interni linguae	Tunica mucosa partis anterioris dorsi linguae	Fibers extend from dorsum linguae to facies inferior linguae	N. hypoglossus (CN XII)	R. profundus linguae a. lingualis; Rr. a. facialis	Flattens and broadens tongue
M. vocalis	Mm. laryngis	Proc. vocalis cartilaginis arytenoideae	Lig. vocale	N. laryngeus recurrens	Aa. thyreoideae superior and inferior	Tenses anterior vocal ligament, relaxes posterior vocal ligament
M. zygomaticus major	Mm. faciales	Arcus zygomaticus	Angulus oris	Rr. zygomatici and buccales n. facialis	A. labialis superior (branch of a. facialis)	Draws angle of mouth backward and upward
M. zygomaticus minor	Mm. faciales	Arcus zygomaticus	Angulus oris; Labium superius oris	Rr. zygomatici and buccales n. facialis	A. labialis superior (branch of a. facialis)	Elevates upper lip

CT 3D child skull reconstruction, lateral view

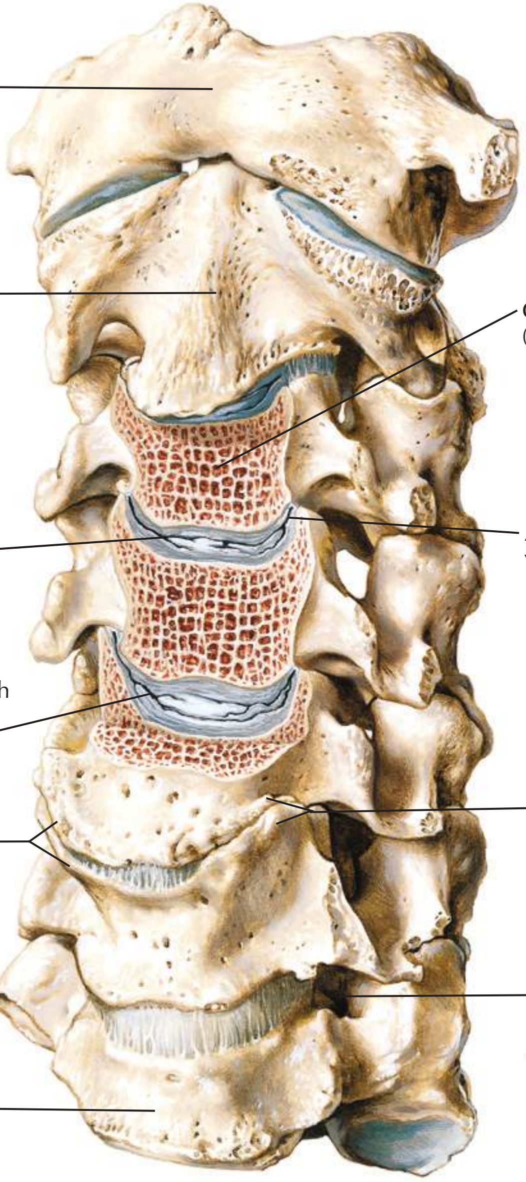

Os parietale
Sutura coronalis
Os frontale
Sutura lambdoidea
Arcus zygomaticus
Sutura squamosa
Os zygomaticum
Os occipitale
Os nasale
Os temporale
Proc. condylaris (mandibulae)
Meatus acusticus externus (of Os temporale)
Proc. coronoideus (mandibulae)
Arcus posterior atlantis (of Vertebra C1)
Spina nasalis anterior
Arcus anterior atlantis

CT 3D child skull reconstruction, frontal view

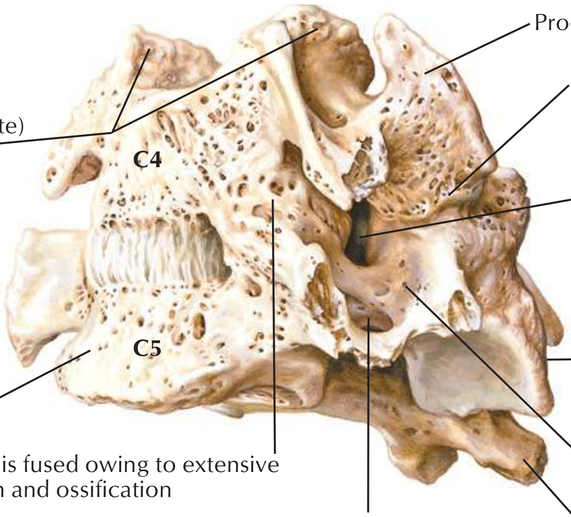

Sutura sagittalis
Fonticulus anterior
Sutura coronalis
Os frontale
Os parietale
Sutura metopica (Sutura frontalis)
Nasion
Margo supraorbitalis
Os nasale
Fissura orbitalis superior
Sutura zygomatico-frontalis
Ala major ossis sphenoidei
Foramen infraorbitale
Fissura orbitalis inferior
Os zygomaticum
Maxilla

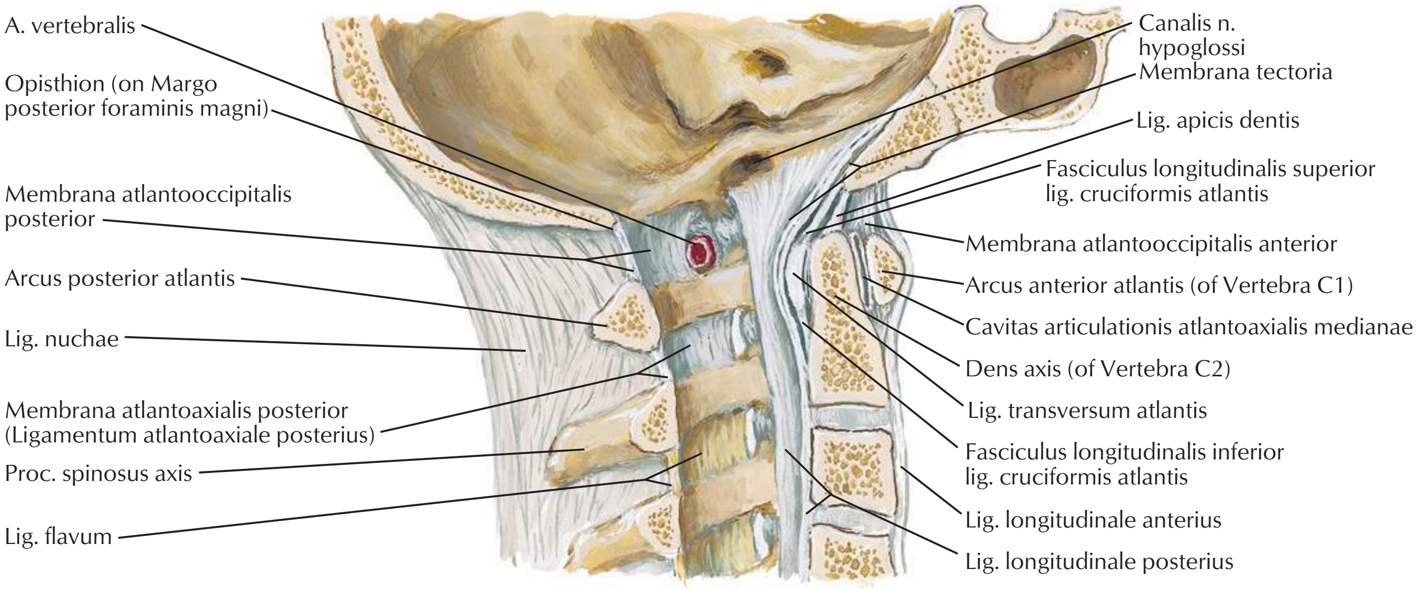
Degenerative Changes in Cervical Vertebrae

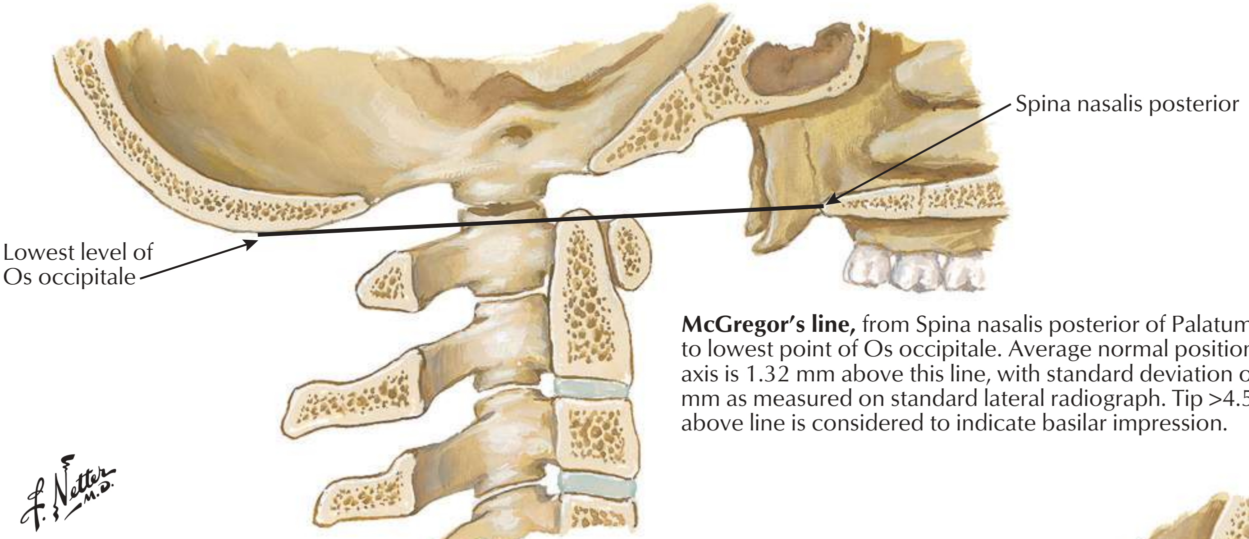
Degenerative changes in the cervical spine (ankylosing spondylitis)


Atlas (Vertebra C1)
Axis (Vertebra C2)
Corpus vertebrae C3 (*sectioned in coronal plane*)
Complete transverse cleft in Discus intervertebralis
Articulatio uncovertebralis with cleft formation
Spread of cleft formation into central portion of Discus intervertebralis with age, leading to progressive degenerative changes in the disc
Deformed Corpora vertebralia and lipping of vertebral margins
Spondylophytes (osteophytes) on Proc. uncinatus
Narrowing of Foramen intervertebrale
Vertebra C7

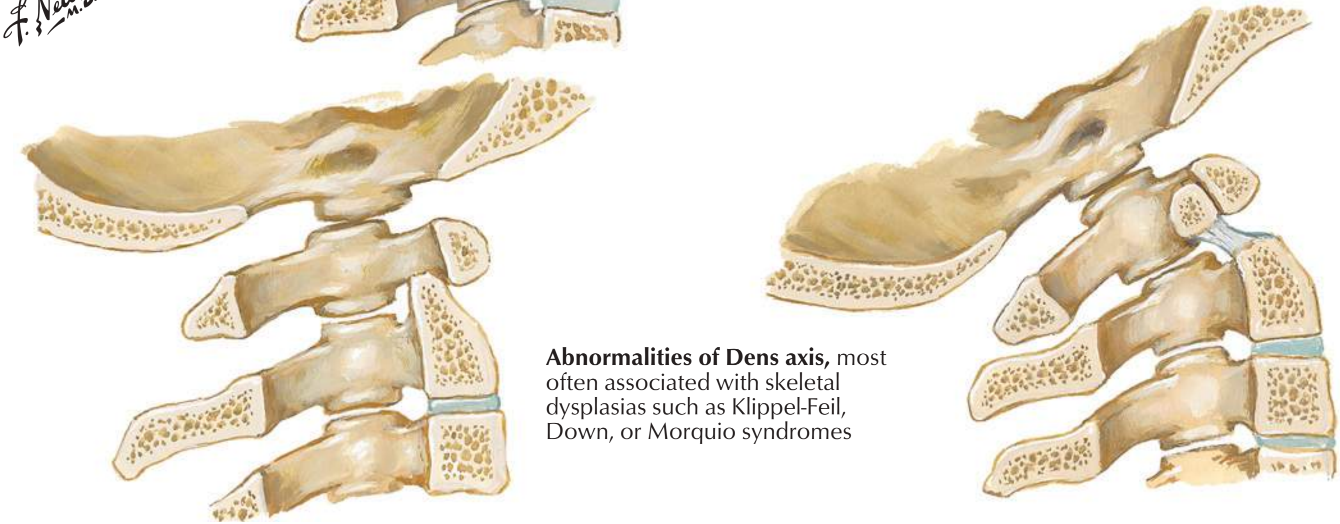
Advanced ankylosing spondylitis with uncovertebral arthrosis in C4 and C5


Proc. articularis superior
Advanced spondylophyte (osteophyte) formation on Proc. uncinatus
Articulatio zygapophysialis (Facet joint) ossified owing to advanced osteoarthritic change
C4
Markedly narrowed Foramen intervertebrale may lead to compression of N. spinalis
C5
Proc. articularis inferior with Facies articularis inferior
Corpus vertebrae
Groove for N. spinalis on Proc. transversus
Articulatio uncovertebralis fused owing to extensive spondylophyte formation and ossification
Potential for compression of A. vertebralis within Foramen transversarium
Proc. spinosus


A. vertebralis
Opisthion (on Margo posterior foraminis magni)
Membrana atlantooccipitalis posterior
Arcus posterior atlantis
Lig. nuchae
Membrana atlantoaxialis posterior (Ligamentum atlantoaxiale posterius)
Proc. spinosus axis
Lig. flavum
Canalis n. hypoglossi
Membrana tectoria
Lig. apicis dentis
Fasciculus longitudinalis superior lig. cruciformis atlantis
Membrana atlantooccipitalis anterior
Arcus anterior atlantis (of Vertebra C1)
Cavitas articulationis atlantoaxialis medianae
Dens axis (of Vertebra C2)
Lig. transversum atlantis
Fasciculus longitudinalis inferior lig. cruciformis atlantis
Lig. longitudinale anterius
Lig. longitudinale posterius


Spina nasalis posterior
Lowest level of Os occipitale
F. Netter M.D.

McGregor's line, from Spina nasalis posterior of Palatum durum to lowest point of Os occipitale. Average normal position of Dens axis is 1.32 mm above this line, with standard deviation of ±2.6 mm as measured on standard lateral radiograph. Tip >4.5 mm above line is considered to indicate basilar impression.

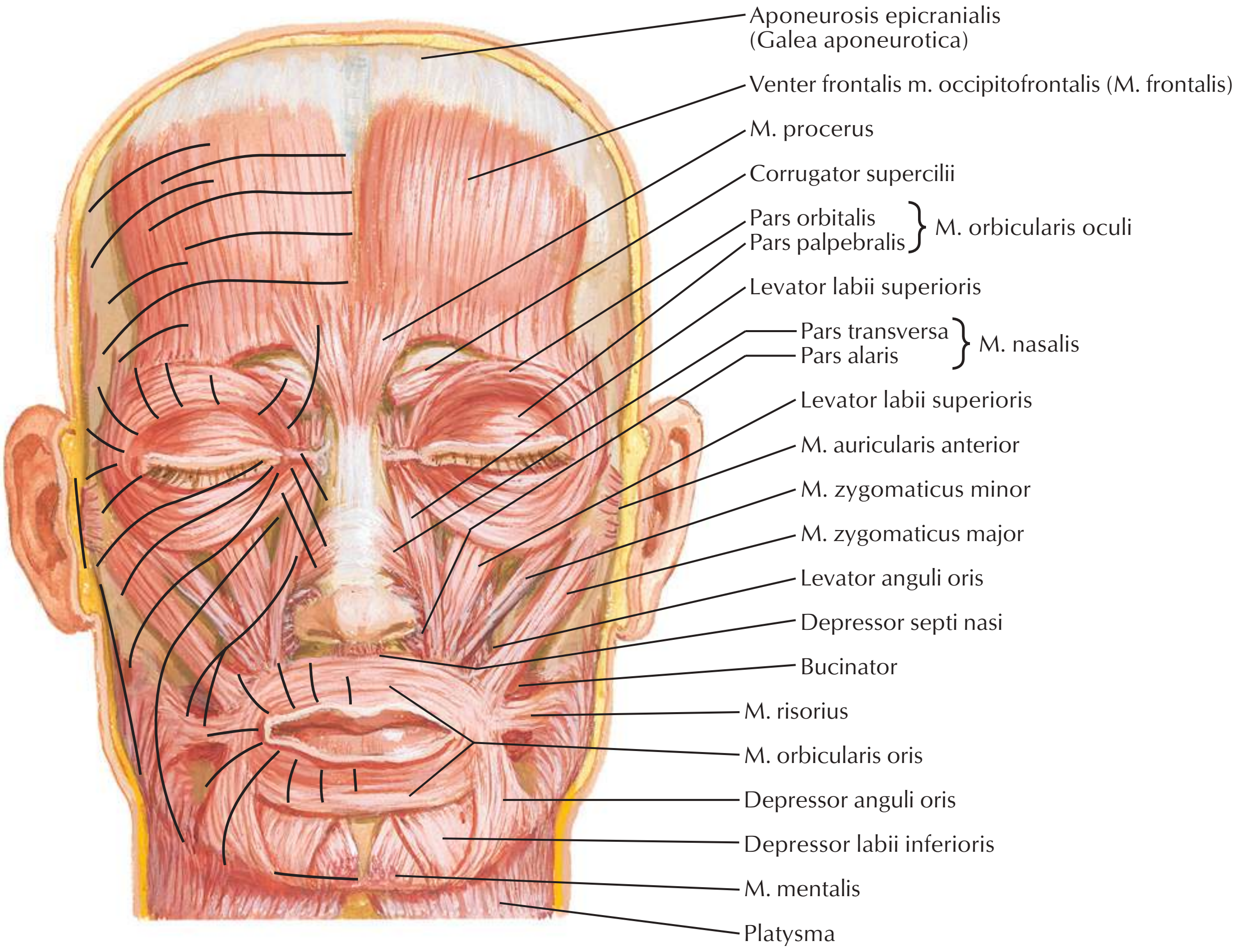


Abnormalities of Dens axis, most often associated with skeletal dysplasias such as Klippel-Feil, Down, or Morquio syndromes

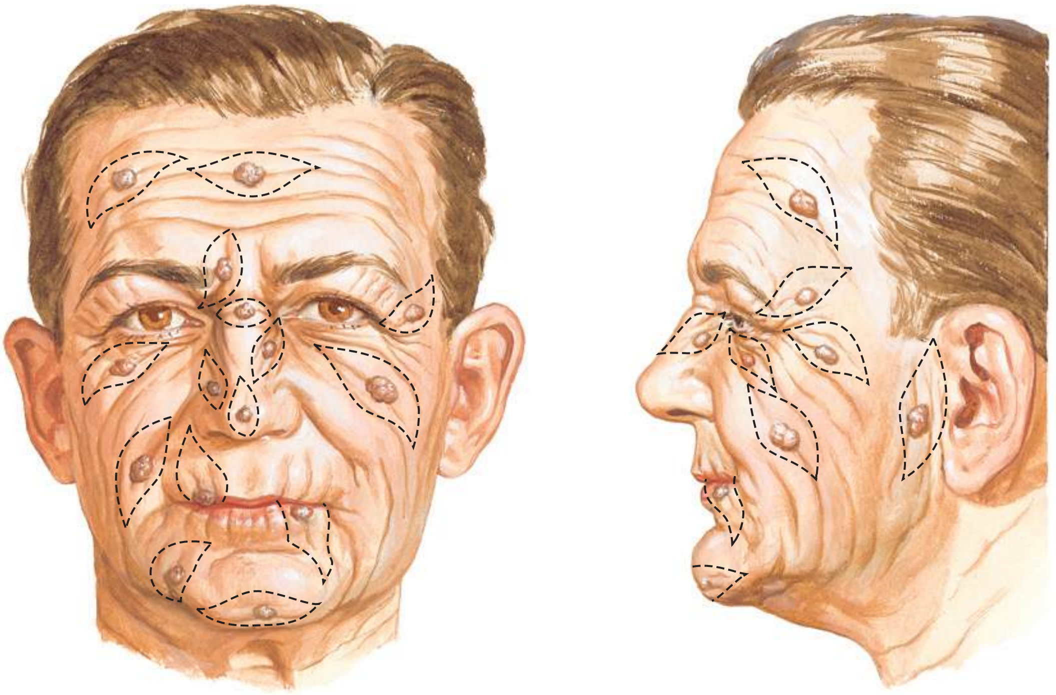
Hypoplastic Dens axis

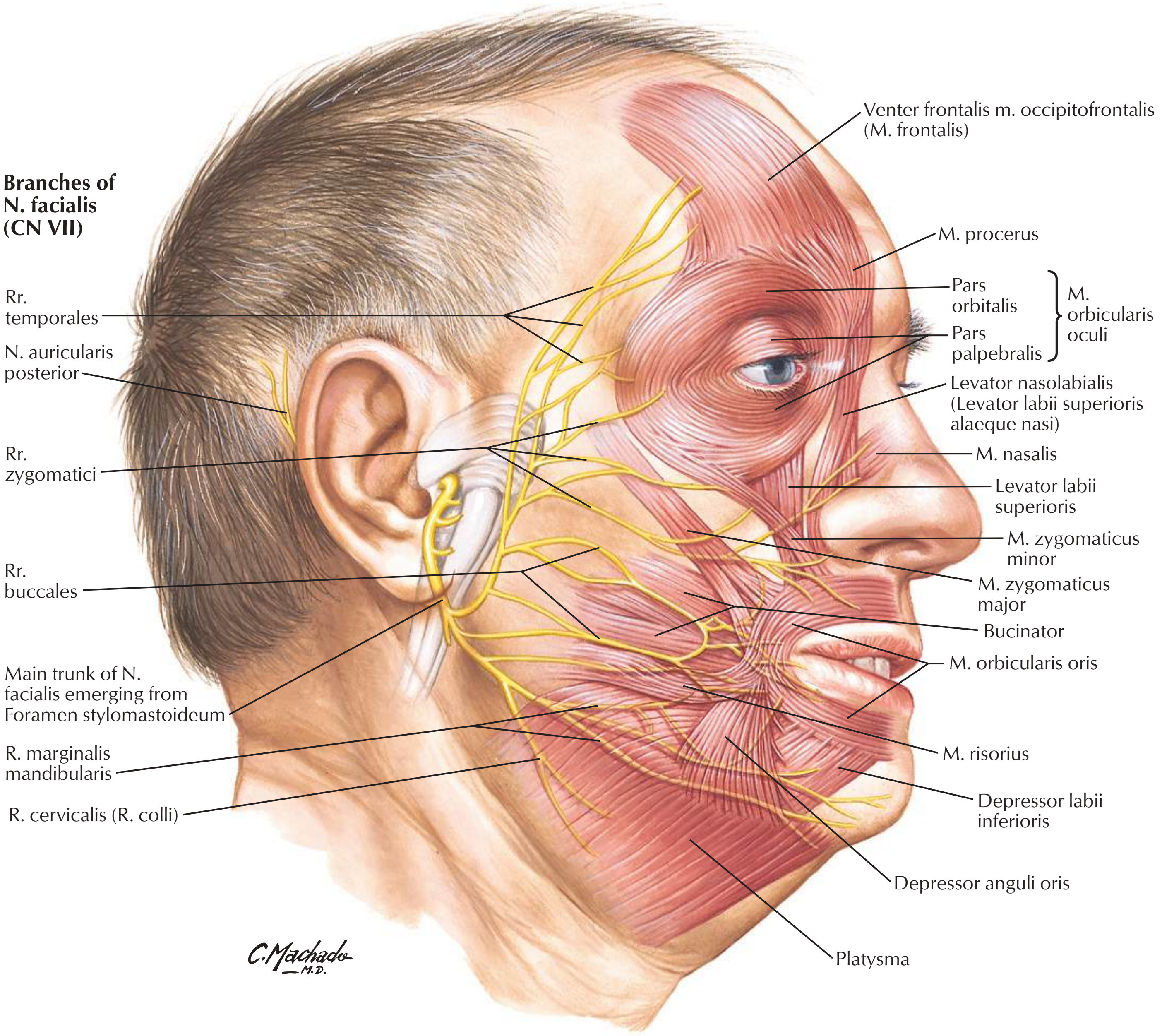
Os odontoideum with fibrous union and narrowing of Canalis vertebralis with head in extension

Muscles of Facial Expression: Anterior View


Aponeurosis epicranialis
(Galea aponeurotica)
Venter frontalis m. occipitofrontalis (M. frontalis)
M. procerus
Corrugator supercilii
Pars orbitalis
Pars palpebralis
M. orbicularis oculi
Levator labii superioris
Pars transversa
Pars alaris
M. nasalis
Levator labii superioris
M. auricularis anterior
M. zygomaticus minor
M. zygomaticus major
Levator anguli oris
Depressor septi nasi
Bucinator
M. risorius
M. orbicularis oris
Depressor anguli oris
Depressor labii inferioris
M. mentalis
Platysma

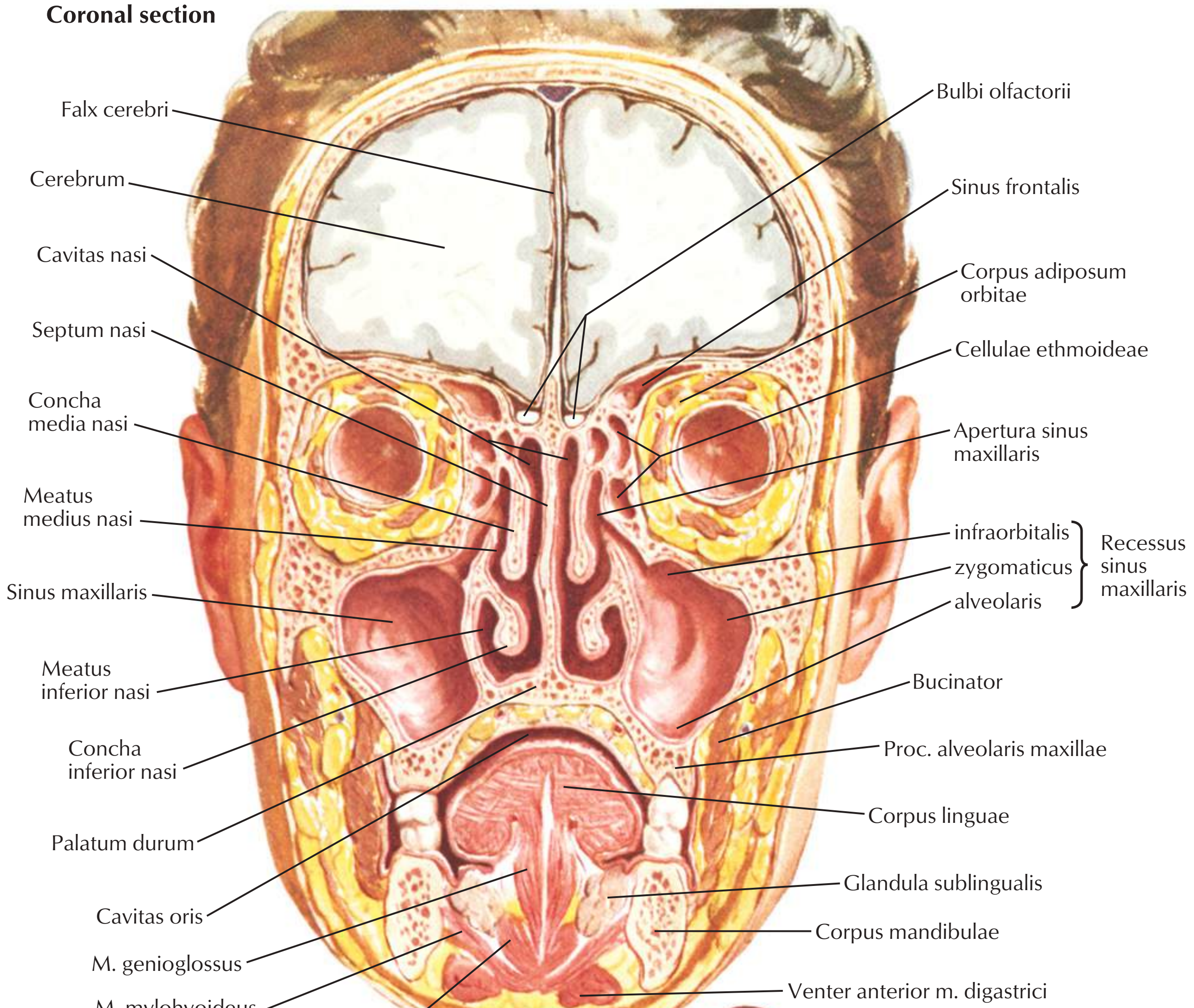
Course of wrinkle lines (Langer's lines) of skin is transverse to fiber direction of facial muscles. Elliptical incisions for removal of skin tumors conform to direction of wrinkle lines.



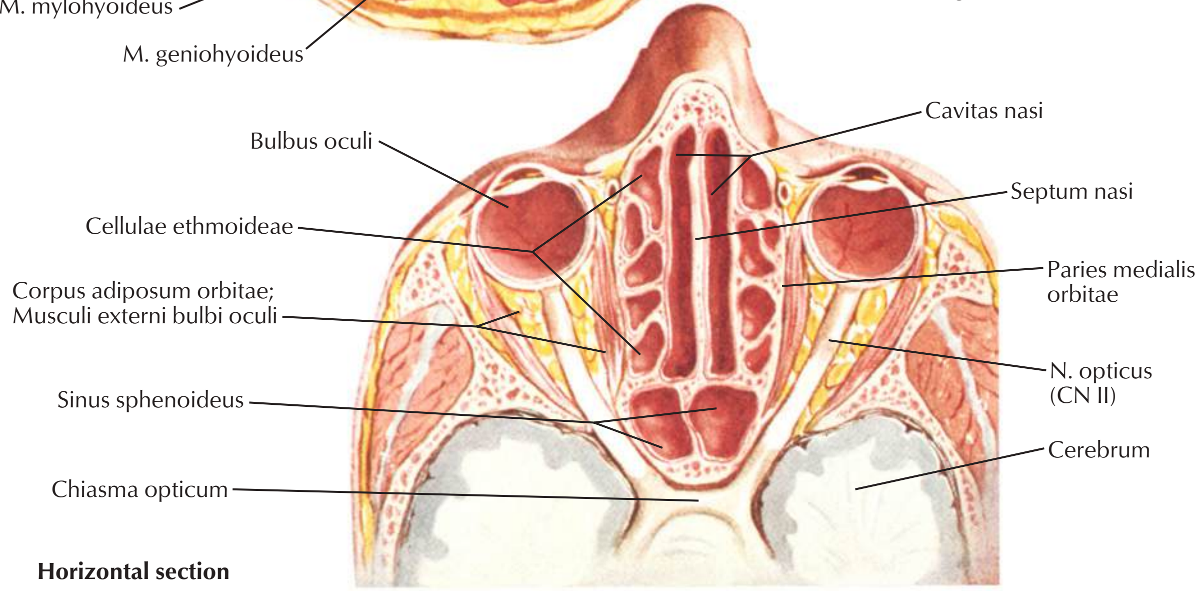

Branches of N. facialis (CN VII)
Rr. temporales
N. auricularis posterior
Rr. zygomatici
Rr. buccales
Main trunk of N. facialis emerging from Foramen stylomastoideum
R. marginalis mandibularis
R. cervicalis (R. colli)
Venter frontalis m. occipitofrontalis (M. frontalis)
M. procerus
Pars orbitalis
Pars palpebralis
M. orbicularis oculi
Levator nasolabialis (Levator labii superioris alaeque nasi)
M. nasalis
Levator labii superioris
M. zygomaticus minor
M. zygomaticus major
Bucinator
M. orbicularis oris
M. risorius
Depressor labii inferioris
Depressor anguli oris
Platysma
C. Machado M.D.

Paranasal Sinuses

Coronal section



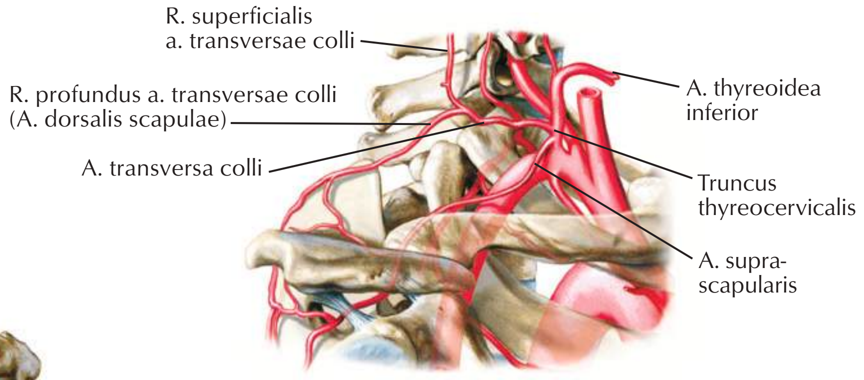
Falx cerebri
Cerebrum
Cavitas nasi
Septum nasi
Concha media nasi
Meatus medius nasi
Sinus maxillaris
Meatus inferior nasi
Concha inferior nasi
Palatum durum
Cavitas oris
M. genioglossus
M. mylohyoideus
M. geniohyoideus
Bulbi olfactorii
Sinus frontalis
Corpus adiposum orbitae
Cellulae ethmoideae
Apertura sinus maxillaris
infraorbitalis
zygomaticus
alveolaris
Recessus sinus maxillaris
Bucinator
Proc. alveolaris maxillae
Corpus linguae
Glandula sublingualis
Corpus mandibulae
Venter anterior m. digastrici



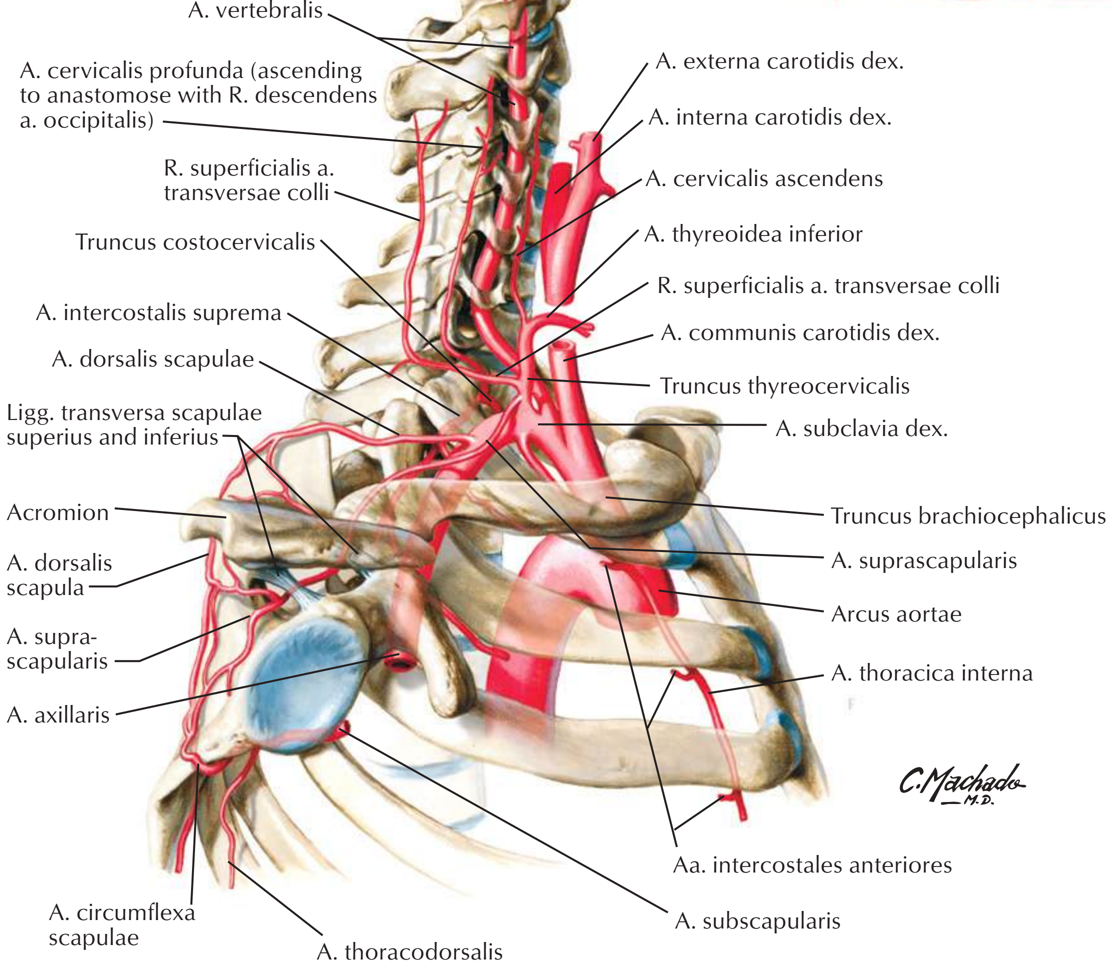
Bulbus oculi
Cellulae ethmoideae
Corpus adiposum orbitae; Musculi externi bulbi oculi
Sinus sphenoideus
Chiasma opticum
Cavitas nasi
Septum nasi
Paries medialis orbitae
N. opticus (CN II)
Cerebrum

Horizontal section

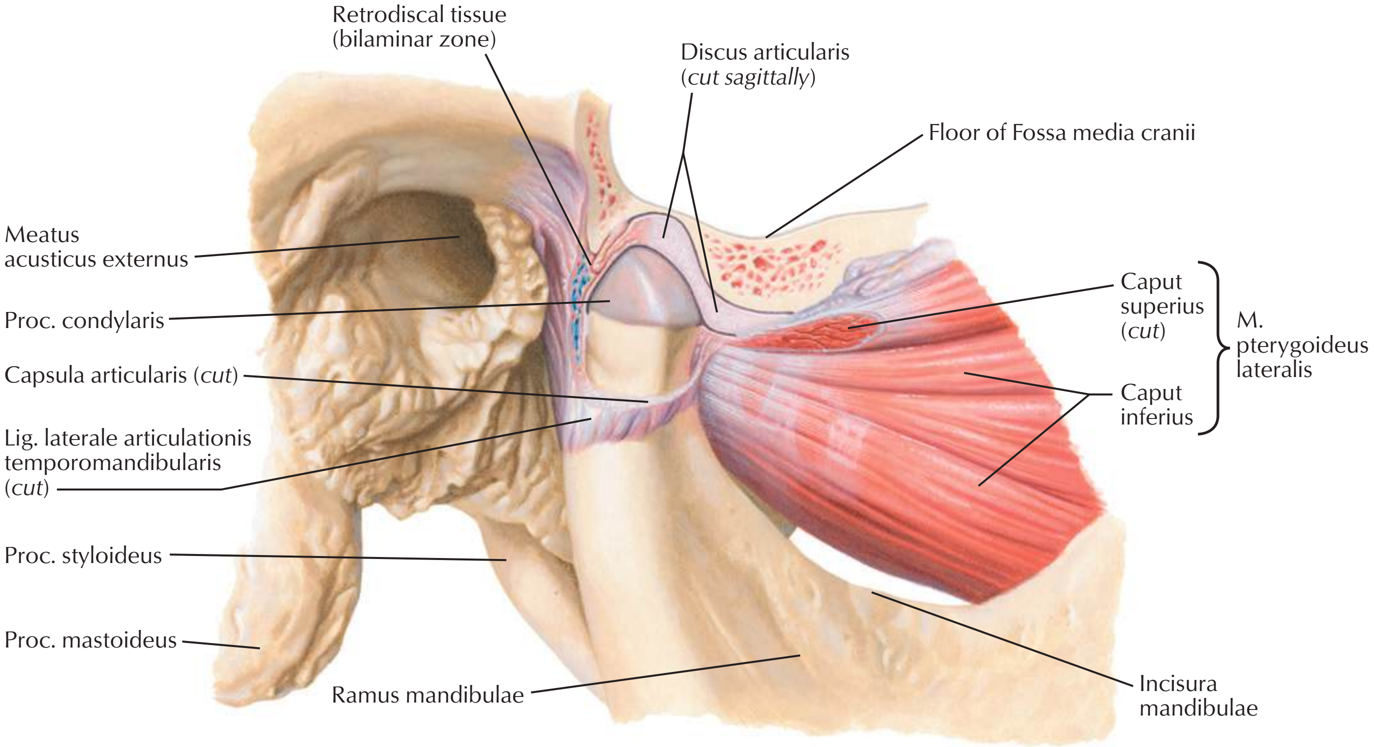
Common origin of Rr. superficialis and profundus from A. transversa colli (~30%)

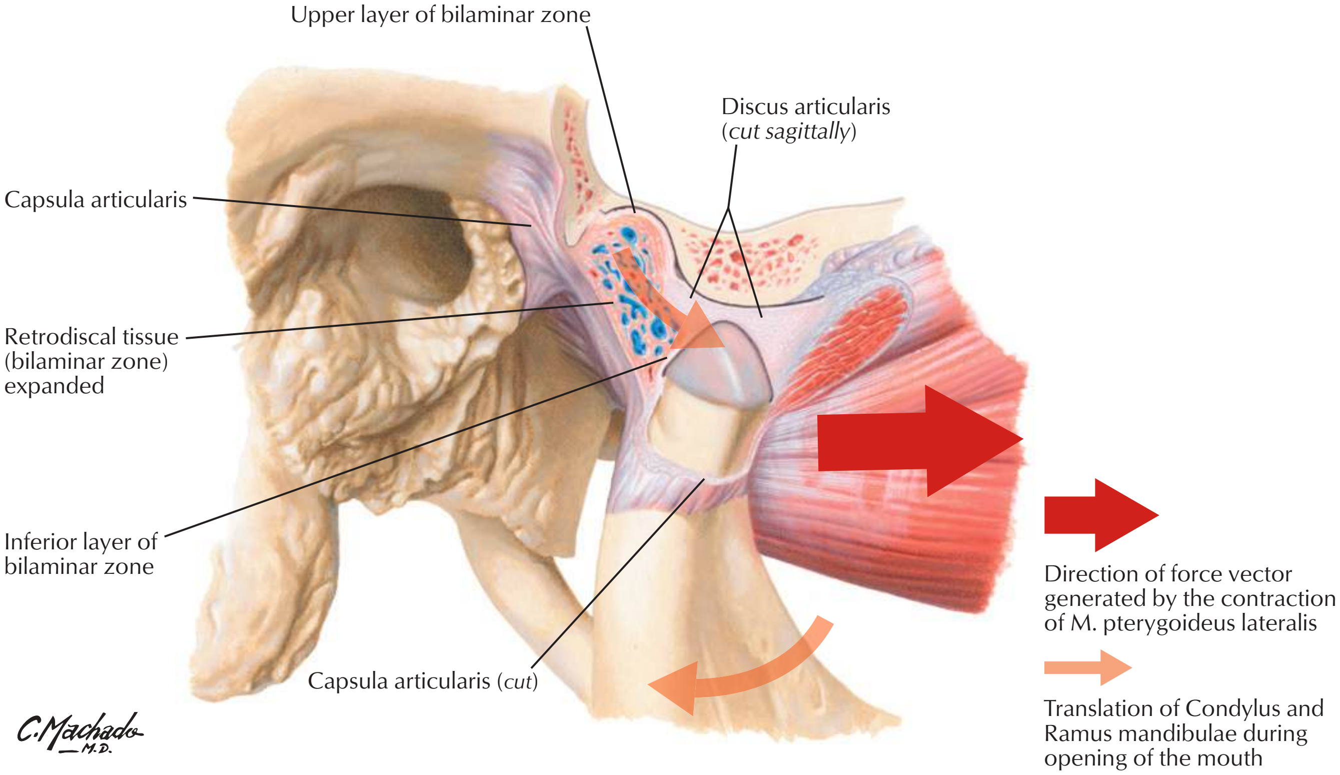

R. superficialis a. transversae colli
R. profundus a. transversae colli (A. dorsalis scapulae)
A. transversa colli
A. thyreoidea inferior
Truncus thyreocervicalis
A. suprascapularis

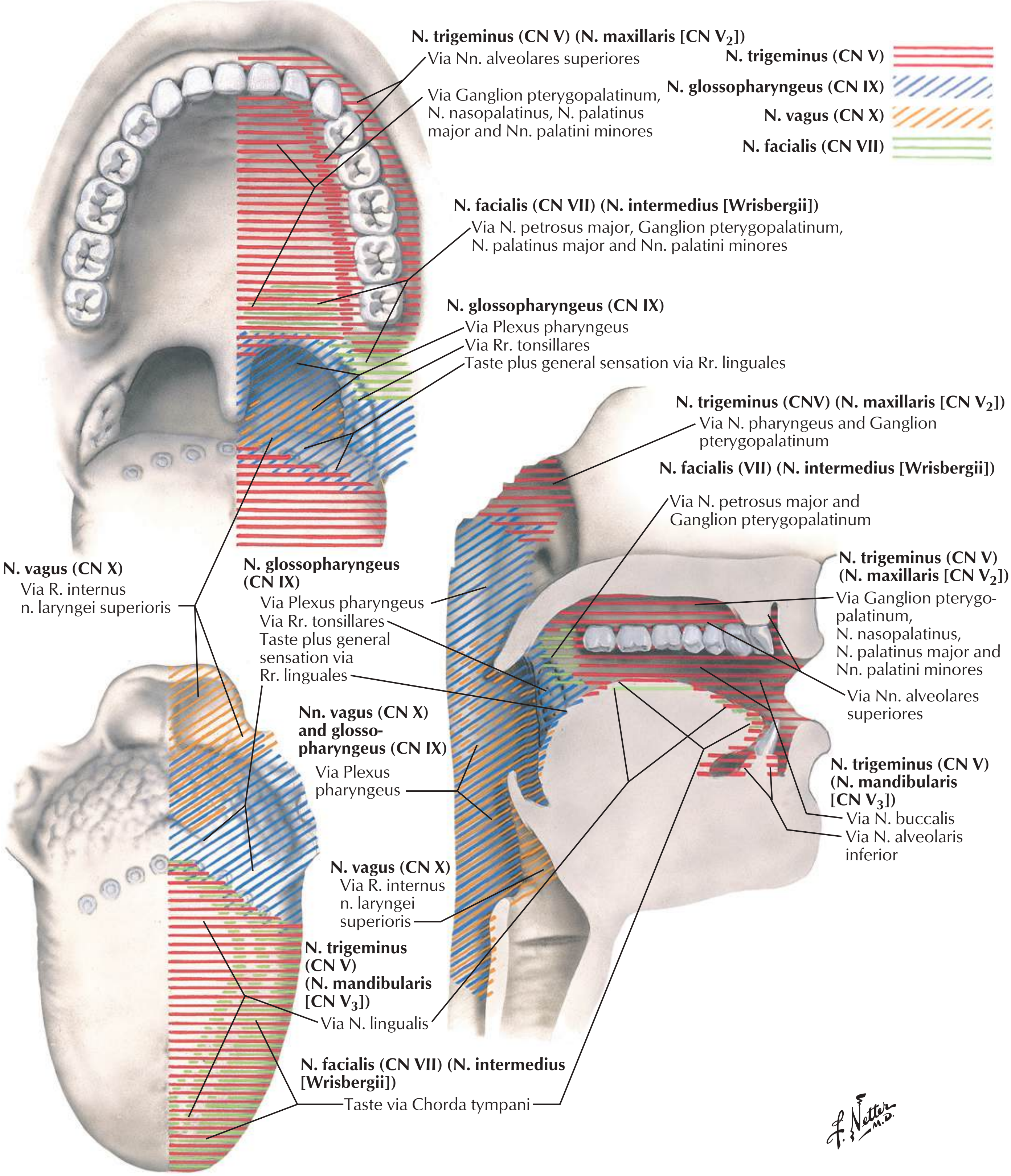
Right oblique schematic view


A. vertebralis
A. cervicalis profunda (ascending to anastomose with R. descendens a. occipitalis)
R. superficialis a. transversae colli
Truncus costocervicalis
A. intercostalis suprema
A. dorsalis scapulae
Ligg. transversa scapulae superius and inferius
Acromion
A. dorsalis scapula
A. suprascapularis
A. axillaris
A. circumflexa scapulae
A. thoracodorsalis
A. externa carotidis dex.
A. interna carotidis dex.
A. cervicalis ascendens
A. thyreoidea inferior
R. superficialis a. transversae colli
A. communis carotidis dex.
Truncus thyreocervicalis
A. subclavia dex.
Truncus brachiocephalicus
A. suprascapularis
Arcus aortae
A. thoracica interna
Aa. intercostales anteriores
A. subscapularis
C. Machado M.D.

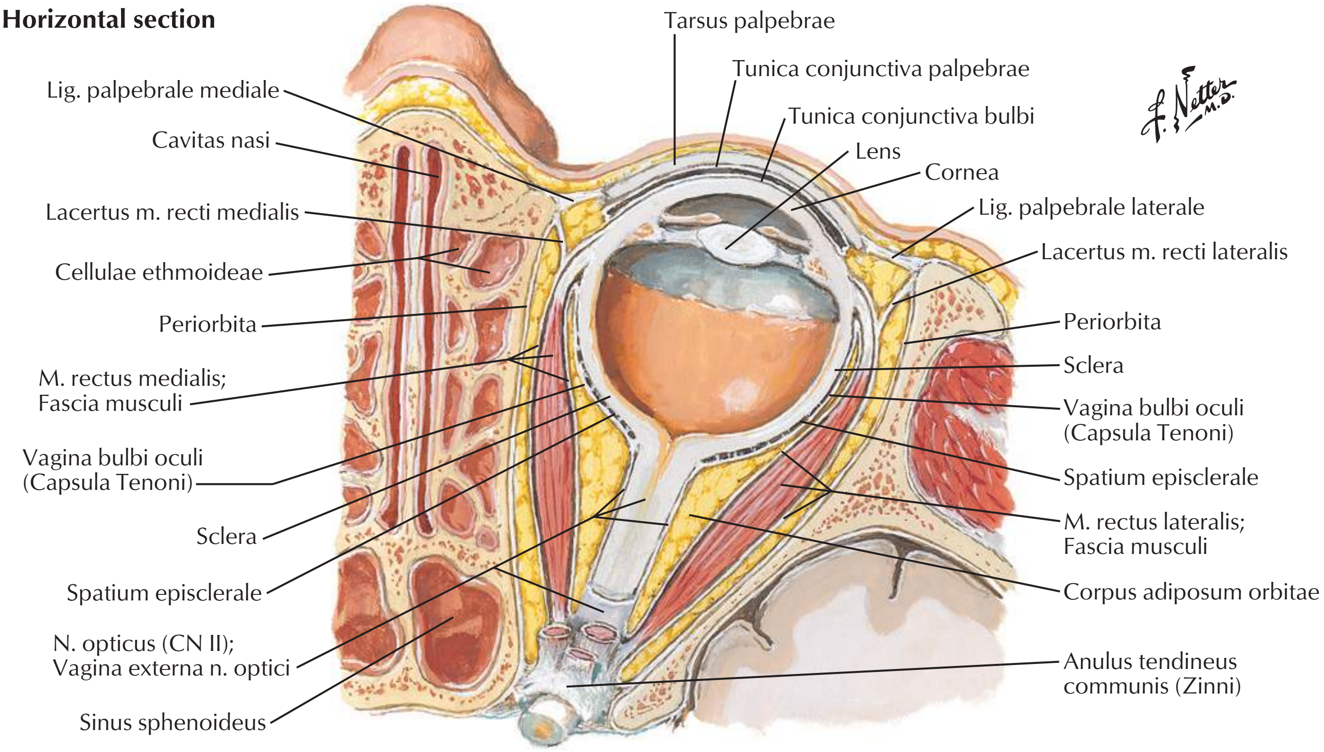
Opening of the Mandible


Retrodiscal tissue (bilaminar zone)
Discus articularis (*cut sagittally*)
Floor of Fossa media cranii
Meatus acusticus externus
Proc. condylaris
Capsula articularis (*cut*)
Lig. laterale articulationis temporomandibularis (*cut*)
Proc. styloideus
Proc. mastoideus
Ramus mandibulae
Caput superius (*cut*)
Caput inferius
M. pterygoideus lateralis
Incisura mandibulae

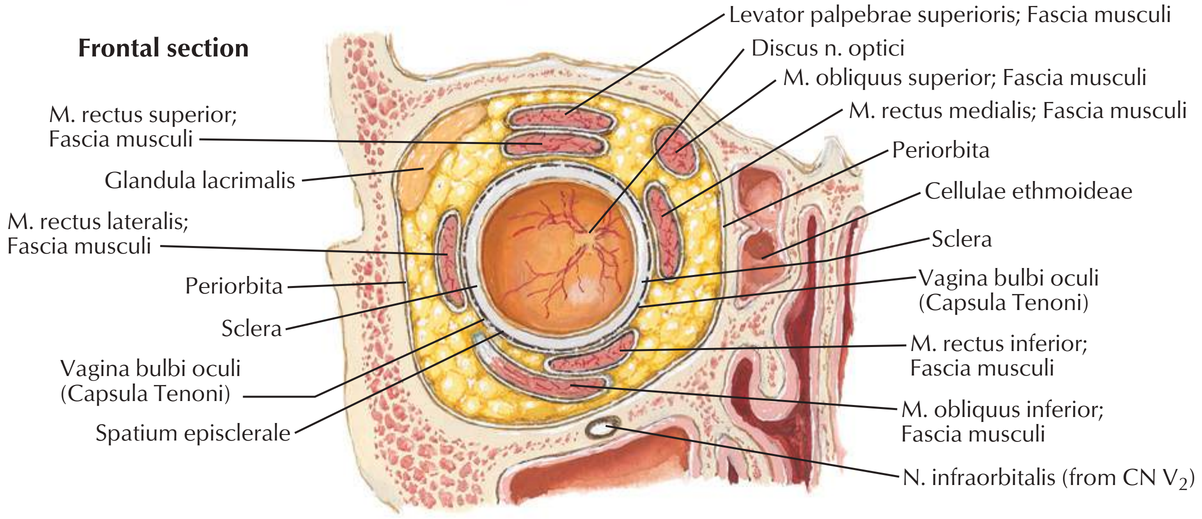

Upper layer of bilaminar zone
Discus articularis (*cut sagittally*)
Capsula articularis
Retrodiscal tissue (bilaminar zone) expanded
Inferior layer of bilaminar zone
Capsula articularis (*cut*)
Direction of force vector generated by the contraction of M. pterygoideus lateralis
Translation of Condylus and Ramus mandibulae during opening of the mouth
C. Machado M.D.


N. trigeminus (CN V)
N. glossopharyngeus (CN IX)
N. vagus (CN X)
N. facialis (CN VII)
N. trigeminus (CN V) (N. maxillaris [CN V_2])
Via Nn. alveolares superiores
Via Ganglion pterygopalatinum, N. nasopalatinus, N. palatinus major and Nn. palatini minores
N. facialis (CN VII) (N. intermedius [Wrisbergii])
Via N. petrosus major, Ganglion pterygopalatinum, N. palatinus major and Nn. palatini minores
N. glossopharyngeus (CN IX)
Via Plexus pharyngeus
Via Rr. tonsillares
Taste plus general sensation via Rr. linguales
N. trigeminus (CNV) (N. maxillaris [CN V_2])
Via N. pharyngeus and Ganglion pterygopalatinum
N. facialis (VII) (N. intermedius [Wrisbergii])
Via N. petrosus major and Ganglion pterygopalatinum
N. trigeminus (CN V) (N. maxillaris [CN V_2])
Via Ganglion pterygopalatinum, N. nasopalatinus, N. palatinus major and Nn. palatini minores
Via Nn. alveolares superiores
N. trigeminus (CN V) (N. mandibularis [CN V_3])
Via N. buccalis
Via N. alveolaris inferior
N. vagus (CN X)
Via R. internus n. laryngei superioris
N. glossopharyngeus (CN IX)
Via Plexus pharyngeus
Via Rr. tonsillares
Taste plus general sensation via Rr. linguales
Nn. vagus (CN X) and glossopharyngeus (CN IX)
Via Plexus pharyngeus
N. vagus (CN X)
Via R. internus n. laryngei superioris
N. trigeminus (CN V) (N. mandibularis [CN V_3])
Via N. lingualis
N. facialis (CN VII) (N. intermedius [Wrisbergii])
Taste via Chorda tympani
F. Netter M.D.

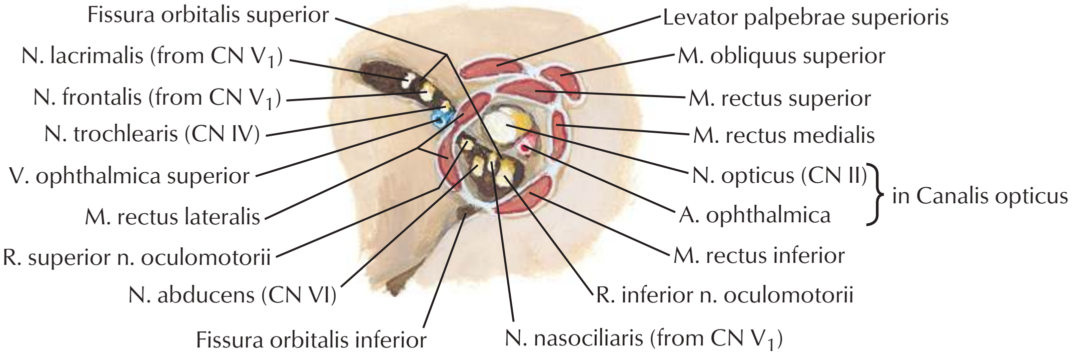
Horizontal section


Tarsus palpebrae
Tunica conjunctiva palpebrae
Tunica conjunctiva bulbi
Lens
Cornea
Lig. palpebrale laterale
Lacertus m. recti lateralis
Periorbita
Sclera
Vagina bulbi oculi (Capsula Tenoni)
Spatium episclerale
M. rectus lateralis; Fascia musculi
Corpus adiposum orbitae
Anulus tendineus communis (Zinni)
Lig. palpebrale mediale
Cavitas nasi
Lacertus m. recti medialis
Cellulae ethmoideae
Periorbita
M. rectus medialis; Fascia musculi
Vagina bulbi oculi (Capsula Tenoni)
Sclera
Spatium episclerale
N. opticus (CN II); Vagina externa n. optici
Sinus sphenoideus

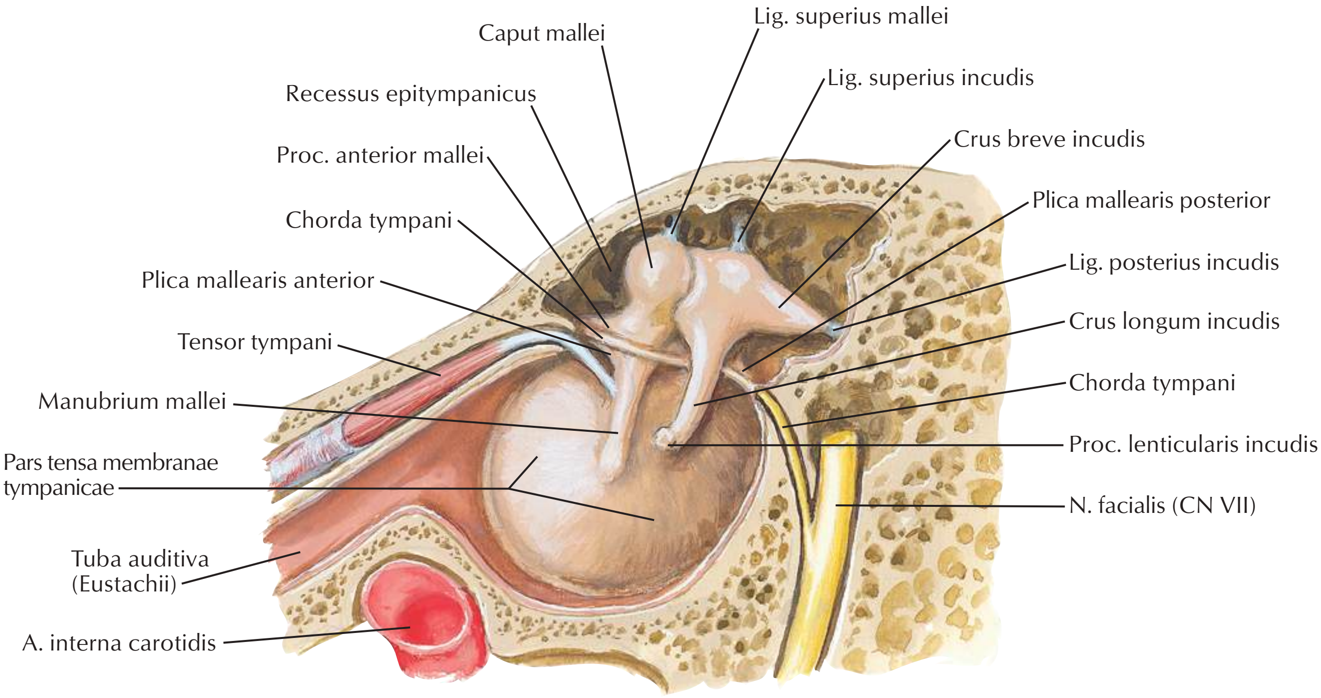
Frontal section


Levator palpebrae superioris; Fascia musculi
Discus n. optici
M. obliquus superior; Fascia musculi
M. rectus medialis; Fascia musculi
Periorbita
Cellulae ethmoideae
Sclera
Vagina bulbi oculi (Capsula Tenoni)
M. rectus inferior; Fascia musculi
M. obliquus inferior; Fascia musculi
N. infraorbitalis (from CN V_2)
M. rectus superior; Fascia musculi
Glandula lacrimalis
M. rectus lateralis; Fascia musculi
Periorbita
Sclera
Vagina bulbi oculi (Capsula Tenoni)
Spatium episclerale

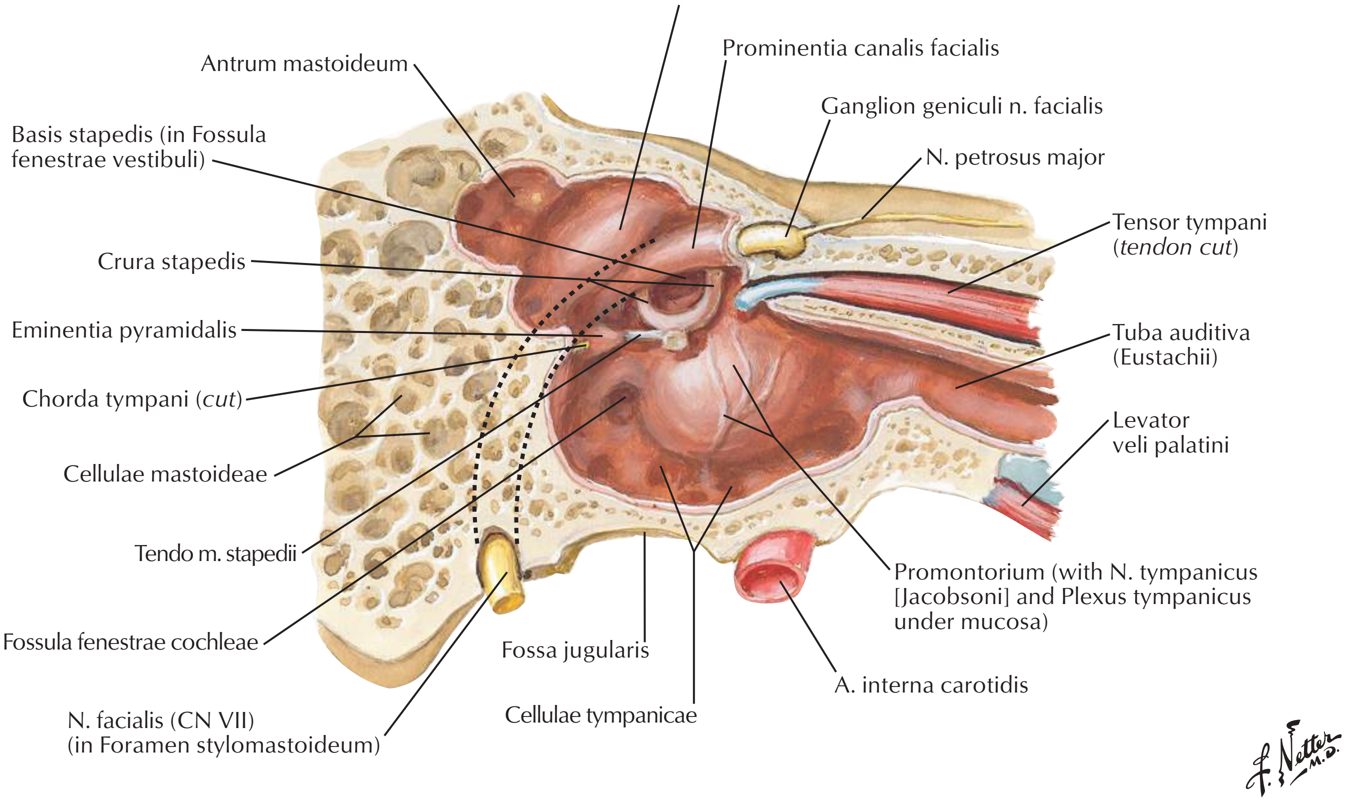
Muscle attachments and nerves and vessels entering orbit


Fissura orbitalis superior
N. lacrimalis (from CN V_1)
N. frontalis (from CN V_1)
N. trochlearis (CN IV)
V. ophthalmica superior
M. rectus lateralis
R. superior n. oculomotorii
N. abducens (CN VI)
Fissura orbitalis inferior
N. nasociliaris (from CN V_1)
R. inferior n. oculomotorii
M. rectus inferior
A. ophthalmica
N. opticus (CN II)
in Canalis opticus
M. rectus medialis
M. rectus superior
M. obliquus superior
Levator palpebrae superioris

Lateral wall of cavitas tympani: medial (internal) view

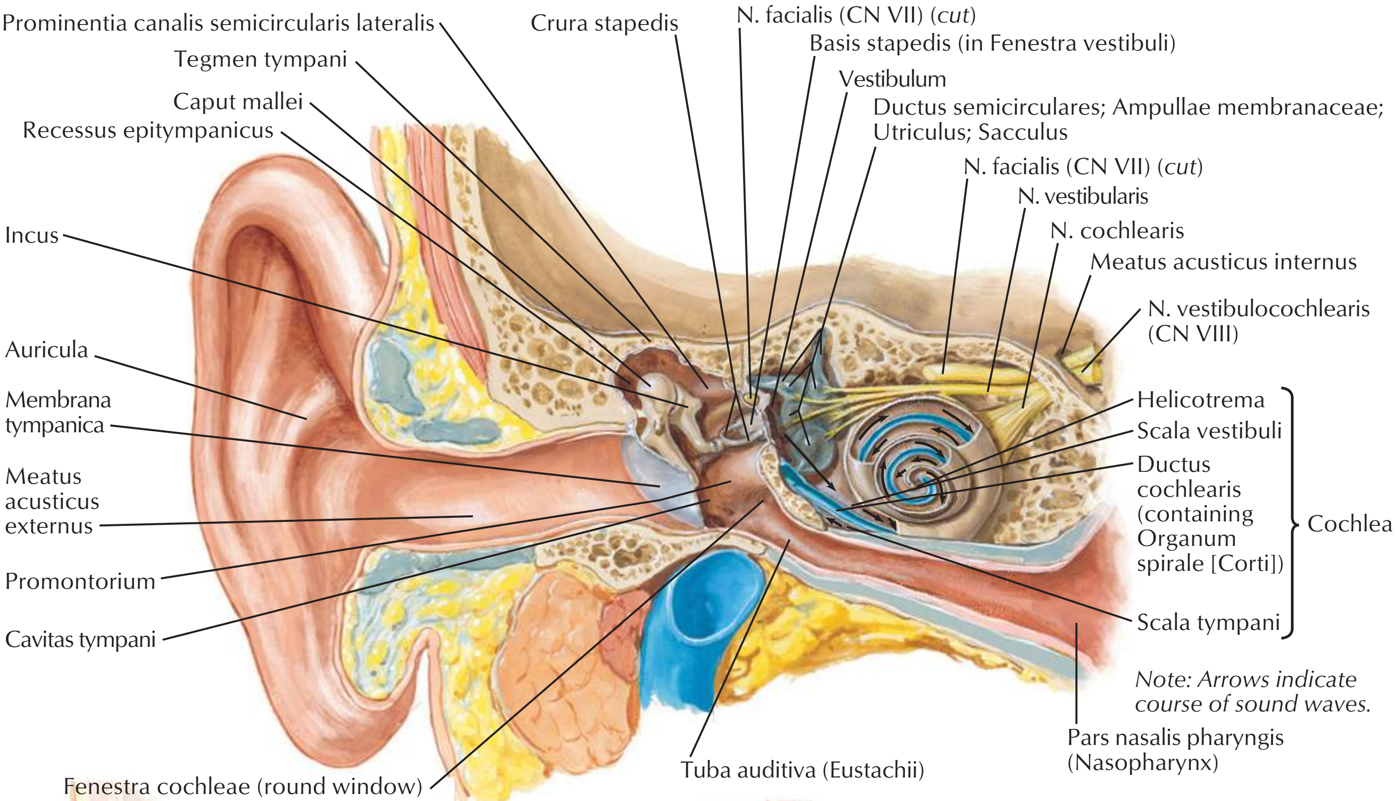

Caput mallei
Lig. superius mallei
Recessus epitympanicus
Lig. superius incudis
Proc. anterior mallei
Crus breve incudis
Chorda tympani
Plica mallearis posterior
Plica mallearis anterior
Lig. posterius incudis
Tensor tympani
Crus longum incudis
Manubrium mallei
Chorda tympani
Pars tensa membranae tympanicae
Proc. lenticularis incudis
N. facialis (CN VII)
Tuba auditiva (Eustachii)
A. interna carotidis

Labyrinthine wall of cavitas tympani: lateral view


Prominentia canalis semicircularis lateralis
Prominentia canalis facialis
Antrum mastoideum
Ganglion geniculi n. facialis
Basis stapedis (in Fossula fenestrae vestibuli)
N. petrosus major
Tensor tympani (*tendon cut*)
Crura stapedis
Eminentia pyramidalis
Tuba auditiva (Eustachii)
Chorda tympani (*cut*)
Levator veli palatini
Cellulae mastoideae
Tendo m. stapedii
Promontorium (with N. tympanicus [Jacobsoni] and Plexus tympanicus under mucosa)
Fossula fenestrae cochleae
Fossa jugularis
A. interna carotidis
N. facialis (CN VII) (in Foramen stylomastoideum)
Cellulae tympanicae
F. Netter M.D.

Anatomy of the Pediatric Ear

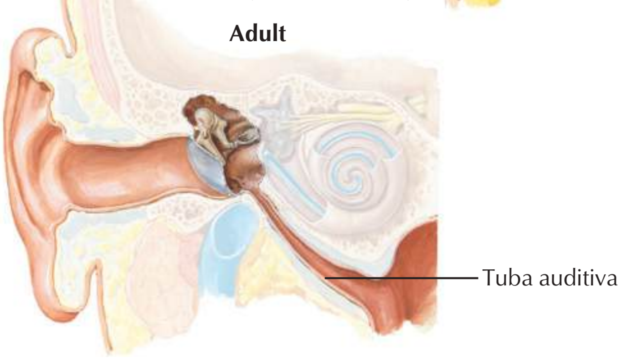
Pediatric ear: frontal section



Prominentia canalis semicircularis lateralis
Tegmen tympani
Caput mallei
Recessus epitympanicus
Incus
Auricula
Membrana tympanica
Meatus acusticus externus
Promontorium
Cavitas tympani
Fenestra cochleae (round window)
Crura stapedis
N. facialis (CN VII) (*cut*)
Basis stapedis (in Fenestra vestibuli)
Vestibulum
Ductus semicirculares; Ampullae membranaceae; Utriculus; Sacculus
N. facialis (CN VII) (*cut*)
N. vestibularis
N. cochlearis
Meatus acusticus internus
N. vestibulocochlearis (CN VIII)
Helicotrema
Scala vestibuli
Ductus cochlearis (containing Organum spirale [Corti])
Scala tympani
Cochlea
Tuba auditiva (Eustachii)
Pars nasalis pharyngis (Nasopharynx)

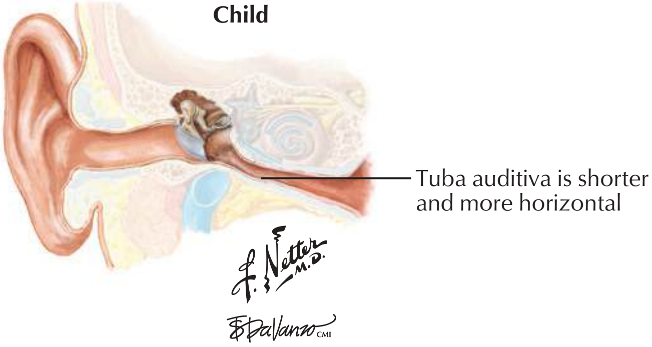
Note: Arrows indicate course of sound waves.

Adult



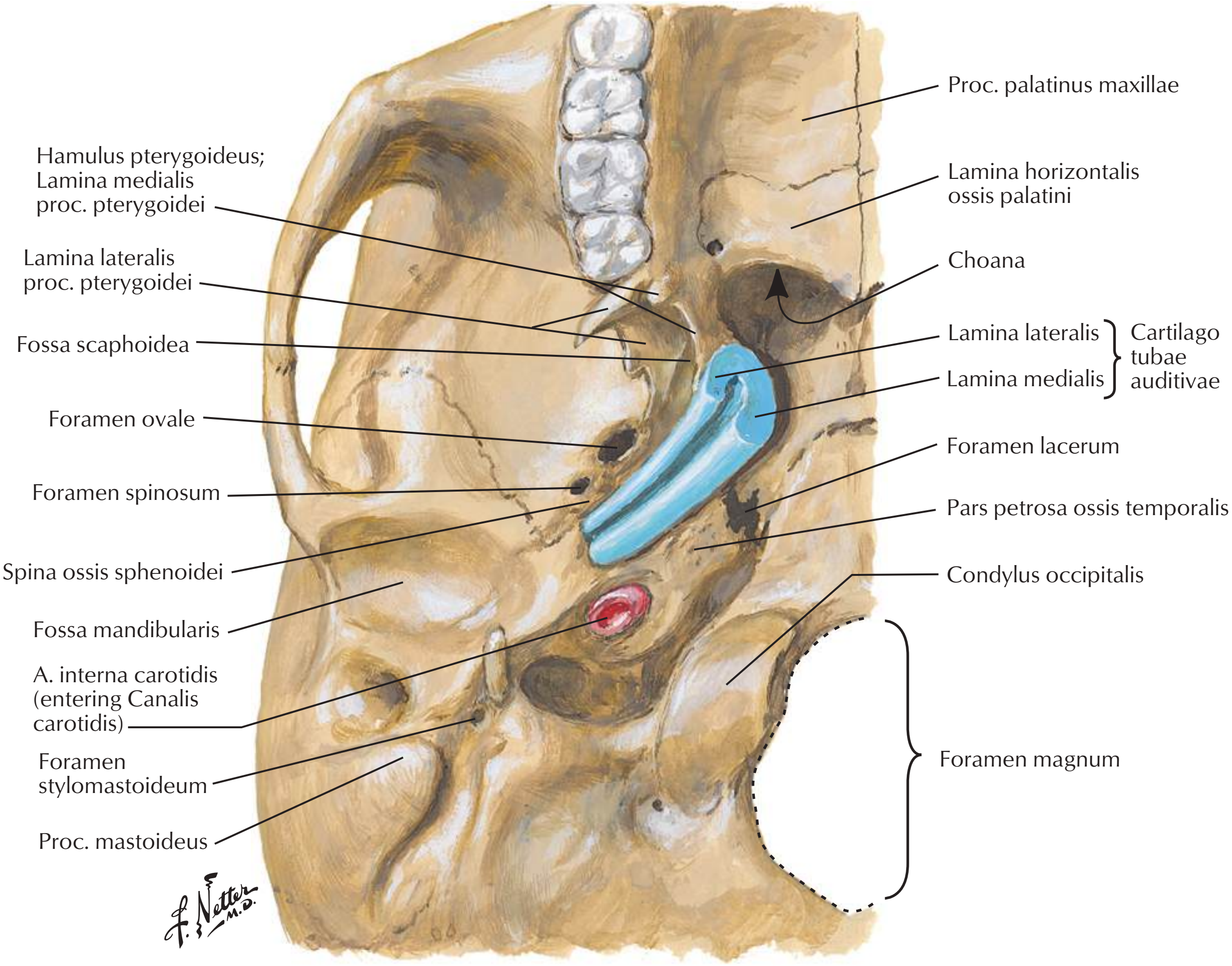
Tuba auditiva

Child

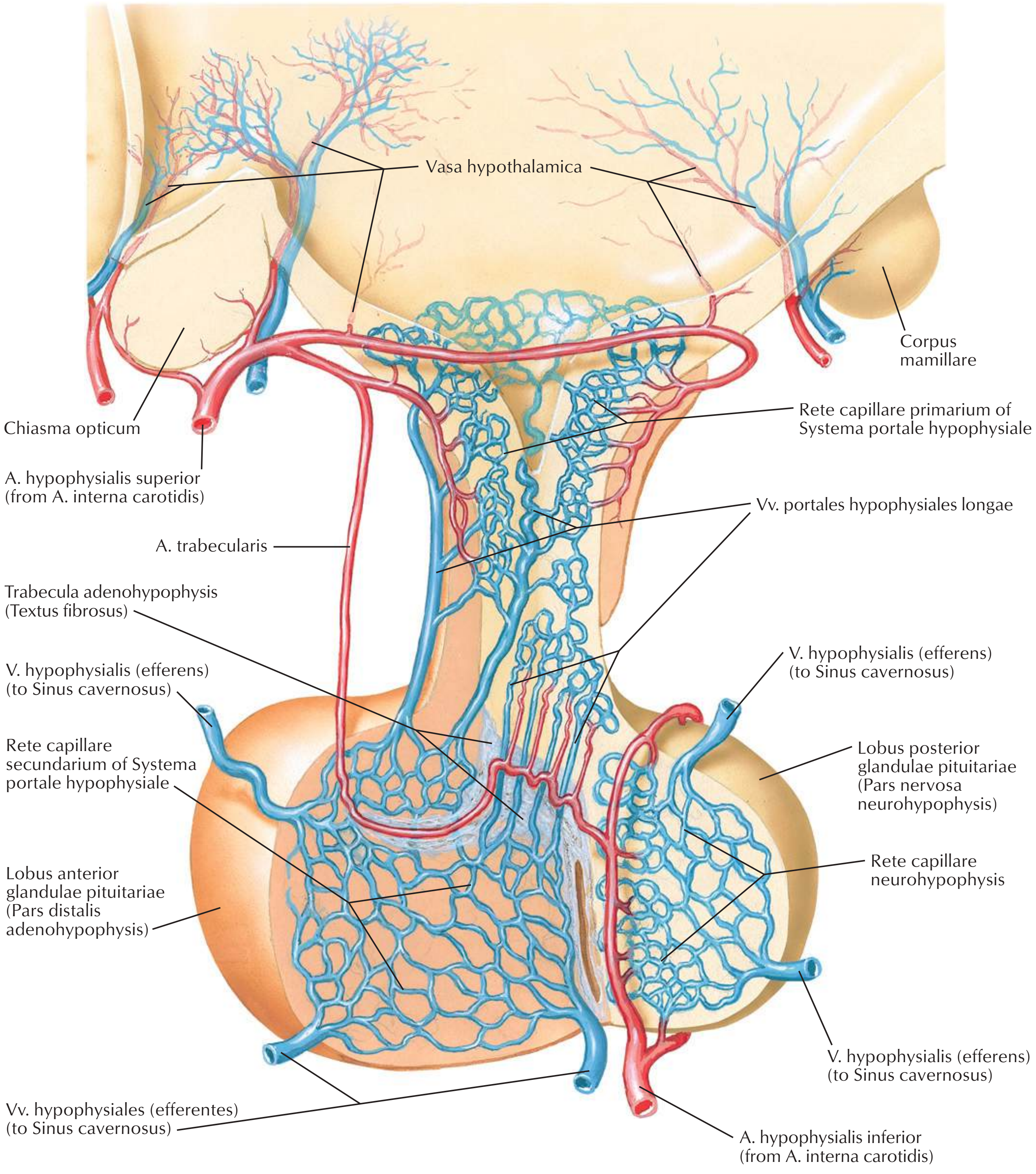


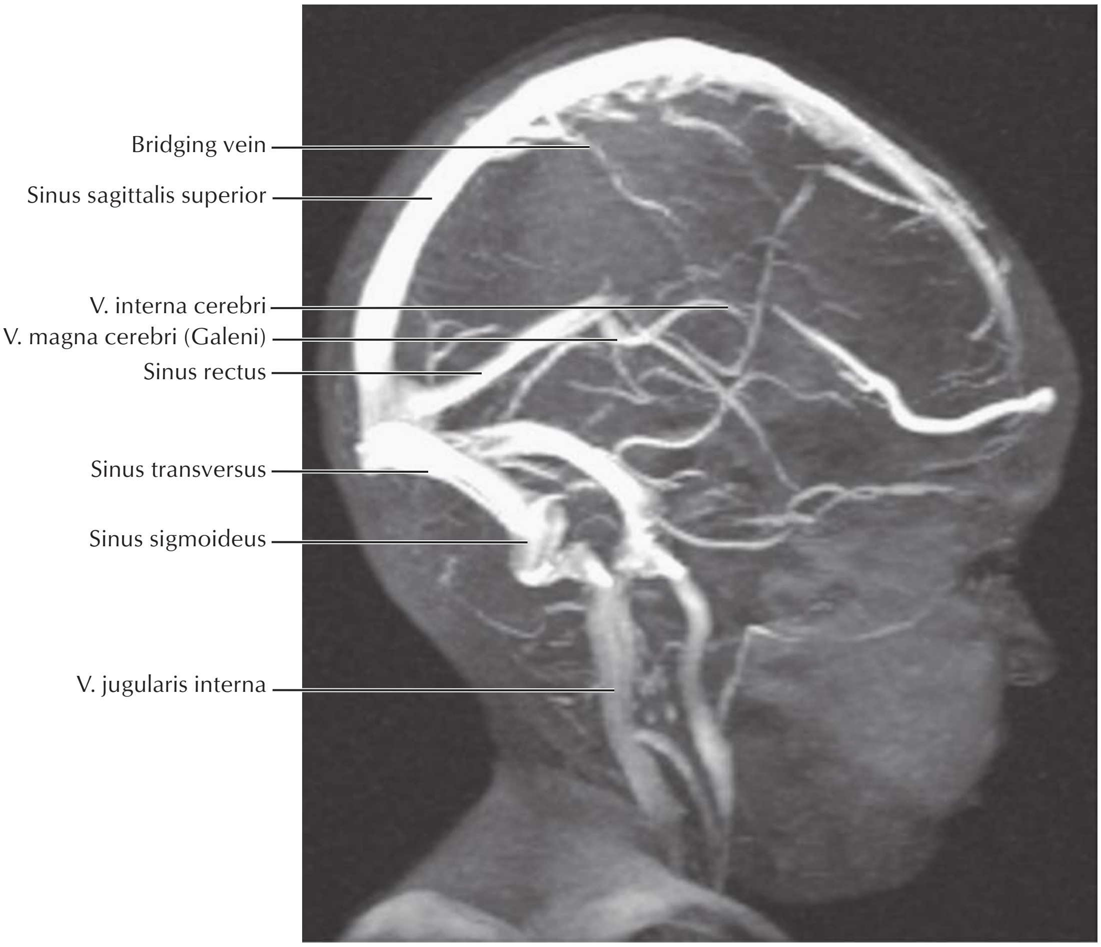
Tuba auditiva is shorter and more horizontal
F. Netter M.D.
DaVanzo CMI

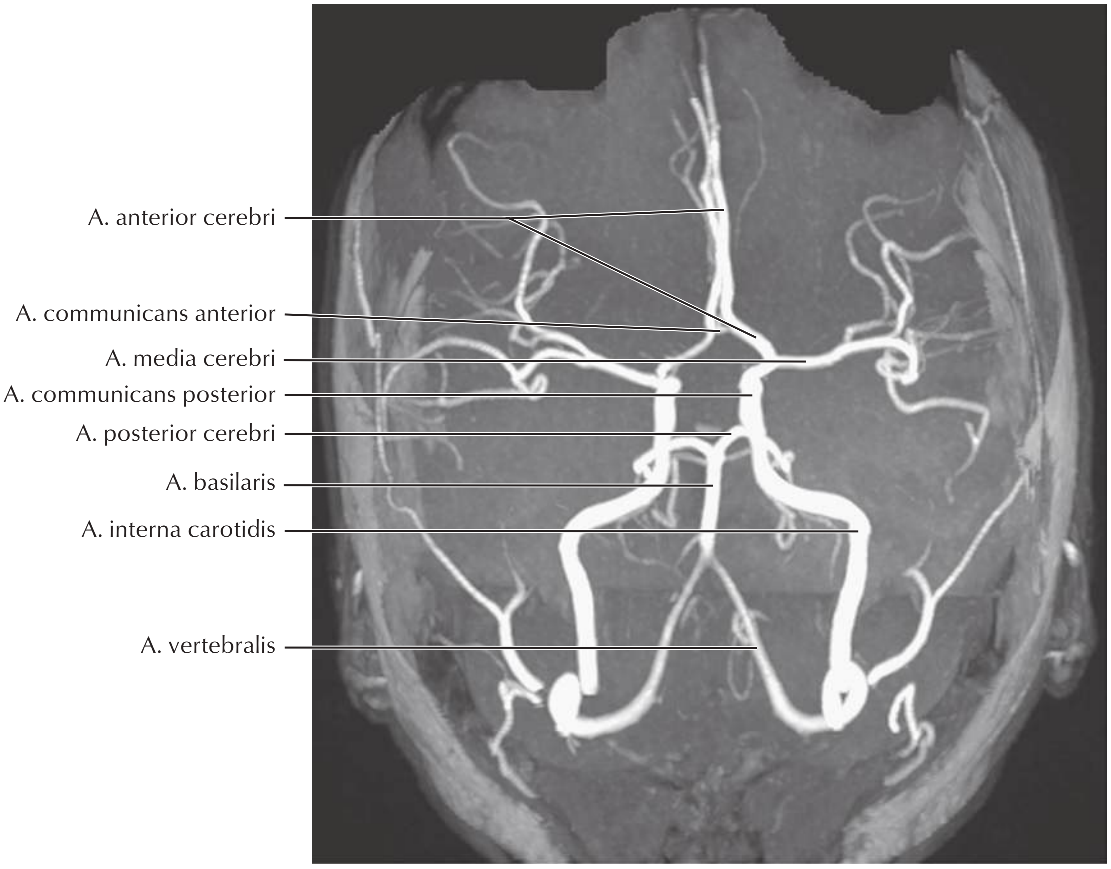
Cartilaginous part of auditory tube (eustachian) at base of skull: inferior view


Proc. palatinus maxillae
Lamina horizontalis ossis palatini
Choana
Lamina lateralis
Lamina medialis
Cartilago tubae auditivae
Foramen lacerum
Pars petrosa ossis temporalis
Condylus occipitalis
Foramen magnum
Hamulus pterygoideus; Lamina medialis proc. pterygoidei
Lamina lateralis proc. pterygoidei
Fossa scaphoidea
Foramen ovale
Foramen spinosum
Spina ossis sphenoidei
Fossa mandibularis
A. interna carotidis (entering Canalis carotidis)
Foramen stylomastoideum
Proc. mastoideus
F. Netter M.D.

Arteries and Veins of Hypothalamus and Hypophysis

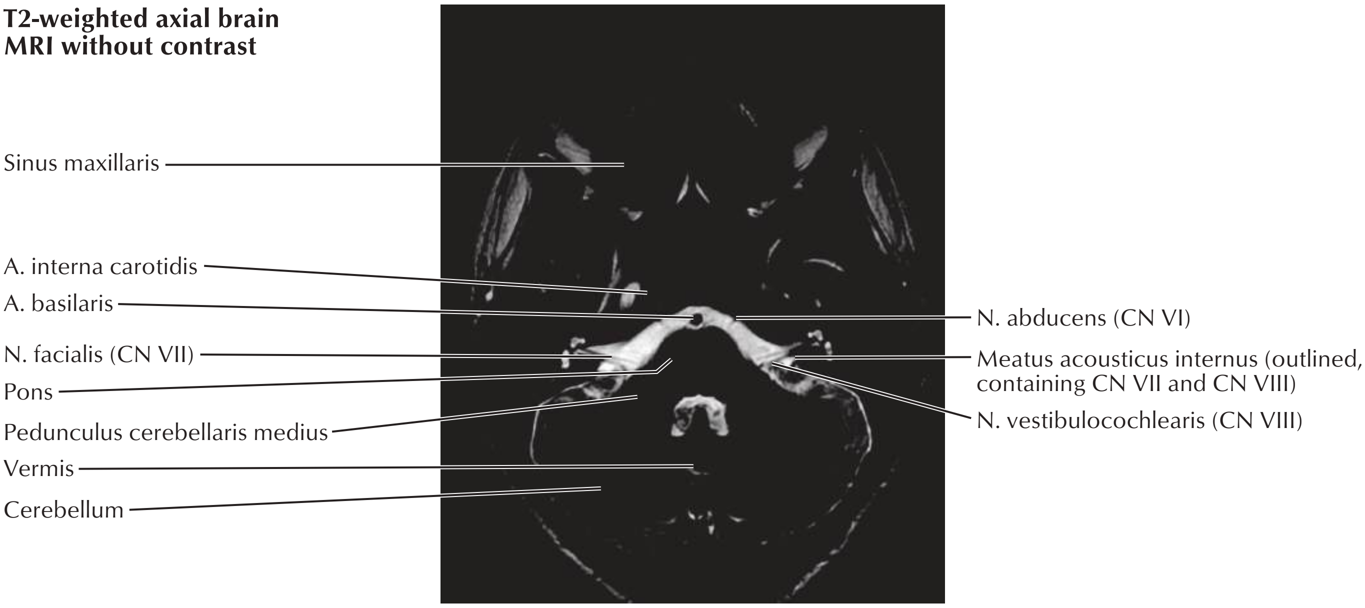

Vasa hypothalamica
Corpus mamillare
Chiasma opticum
Rete capillare primarium of Systema portale hypophysiale
A. hypophysialis superior (from A. interna carotidis)
Vv. portales hypophysiales longae
A. trabecularis
Trabecula adenohypophysis (Textus fibrosus)
V. hypophysialis (efferens) (to Sinus cavernosus)
V. hypophysialis (efferens) (to Sinus cavernosus)
Rete capillare secundarium of Systema portale hypophysiale
Lobus posterior glandulae pituitariae (Pars nervosa neurohypophysis)
Rete capillare neurohypophysis
Lobus anterior glandulae pituitariae (Pars distalis adenohypophysis)
V. hypophysialis (efferens) (to Sinus cavernosus)
Vv. hypophysiales (efferentes) (to Sinus cavernosus)
A. hypophysialis inferior (from A. interna carotidis)


Bridging vein
Sinus sagittalis superior
V. interna cerebri
V. magna cerebri (Galeni)
Sinus rectus
Sinus transversus
Sinus sigmoideus
V. jugularis interna

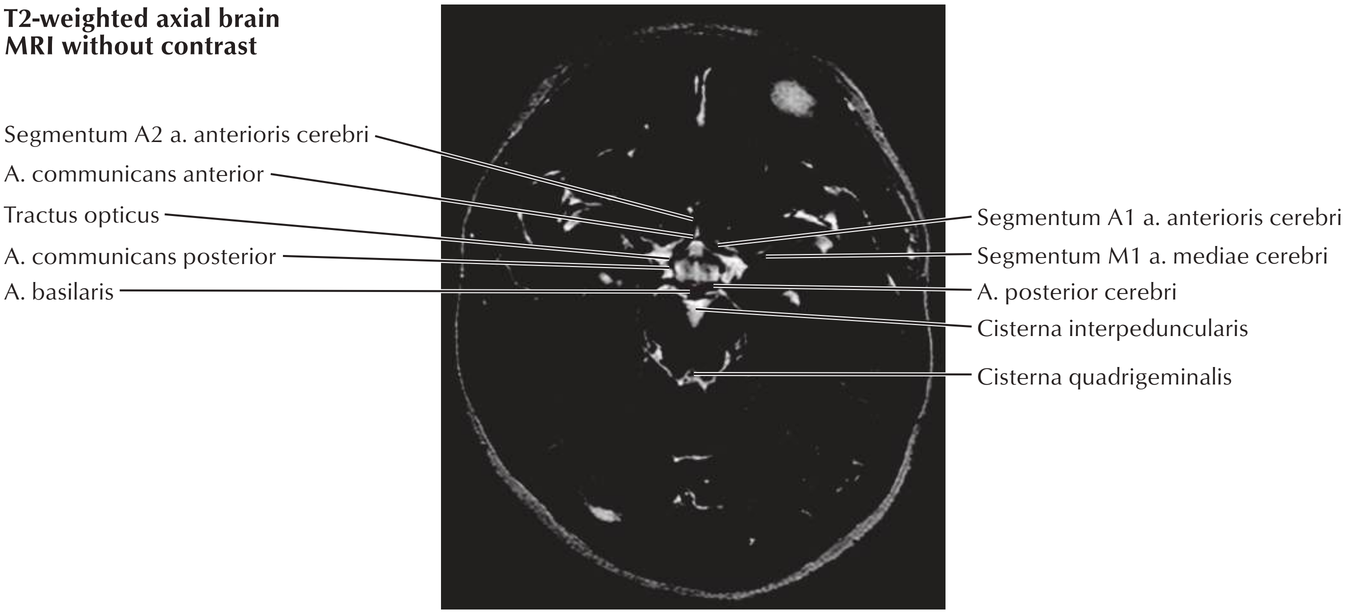

A. anterior cerebri
A. communicans anterior
A. media cerebri
A. communicans posterior
A. posterior cerebri
A. basilaris
A. interna carotidis
A. vertebralis

Axial and Coronal MRIs of Brain

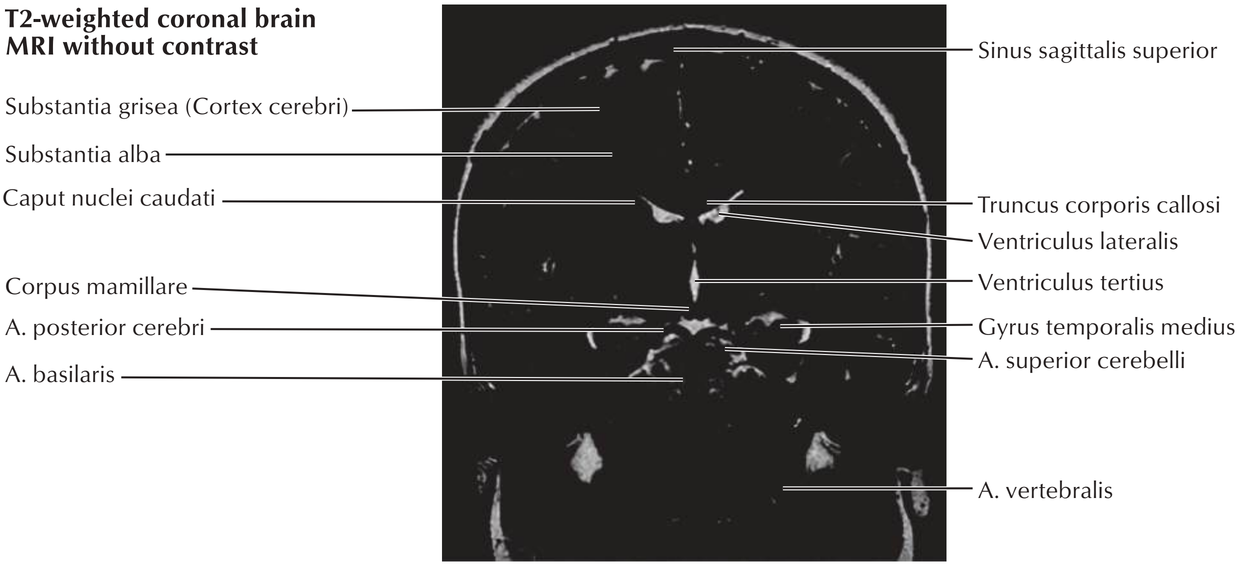
T2-weighted axial brain MRI without contrast


Sinus maxillaris
A. interna carotidis
A. basilaris
N. facialis (CN VII)
Pons
Pedunculus cerebellaris medius
Vermis
Cerebellum
N. abducens (CN VI)
Meatus acousticus internus (outlined, containing CN VII and CN VIII)
N. vestibulocochlearis (CN VIII)

T2-weighted axial brain MRI without contrast


Segmentum A2 a. anterioris cerebri
A. communicans anterior
Tractus opticus
A. communicans posterior
A. basilaris
Segmentum A1 a. anterioris cerebri
Segmentum M1 a. mediae cerebri
A. posterior cerebri
Cisterna interpeduncularis
Cisterna quadrigeminalis

T2-weighted coronal brain MRI without contrast

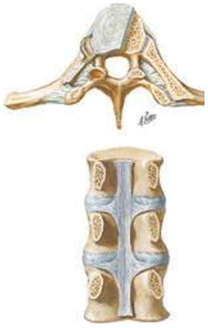

Sinus sagittalis superior
Substantia grisea (Cortex cerebri)
Substantia alba
Caput nuclei caudati
Truncus corporis callosi
Ventriculus lateralis
Ventriculus tertius
Corpus mamillare
A. posterior cerebri
A. basilaris
Gyrus temporalis medius
A. superior cerebelli
A. vertebralis

BACK AND SPINAL CORD

3

Surface Anatomy	161
Bones and Ligaments	162-168
Spinal Cord	169-179
Muscles and Nerves	180-184
Cross-Sectional Anatomy	185-186
Structures with High Clinical Significance	Table 3.1
Muscle Tables	Tables 3.2-3.4
Electronic Bonus Plates	BP33-BP43

ELECTRONIC BONUS PLATES

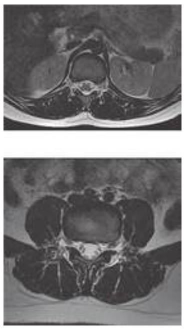

BP33 Vertebral Ligaments

BP34 Cervical Spine: Radiographs

BP35 Cervical Spine: MRI and Radiograph

BP36 Thoracolumbar Spine: Lateral Radiograph

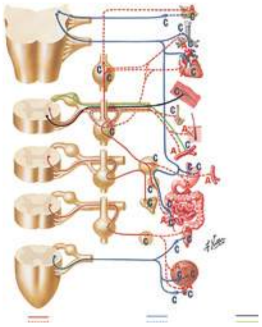
BP37 Lumbar Vertebrae: Radiographs


BP38 Lumbar Spine: MRIs

BP39 Sympathetic Nervous System: General Topography

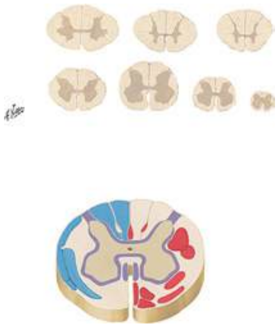
BP40 Parasympathetic Nervous System: General Topography

ELECTRONIC BONUS PLATES—*cont'd*



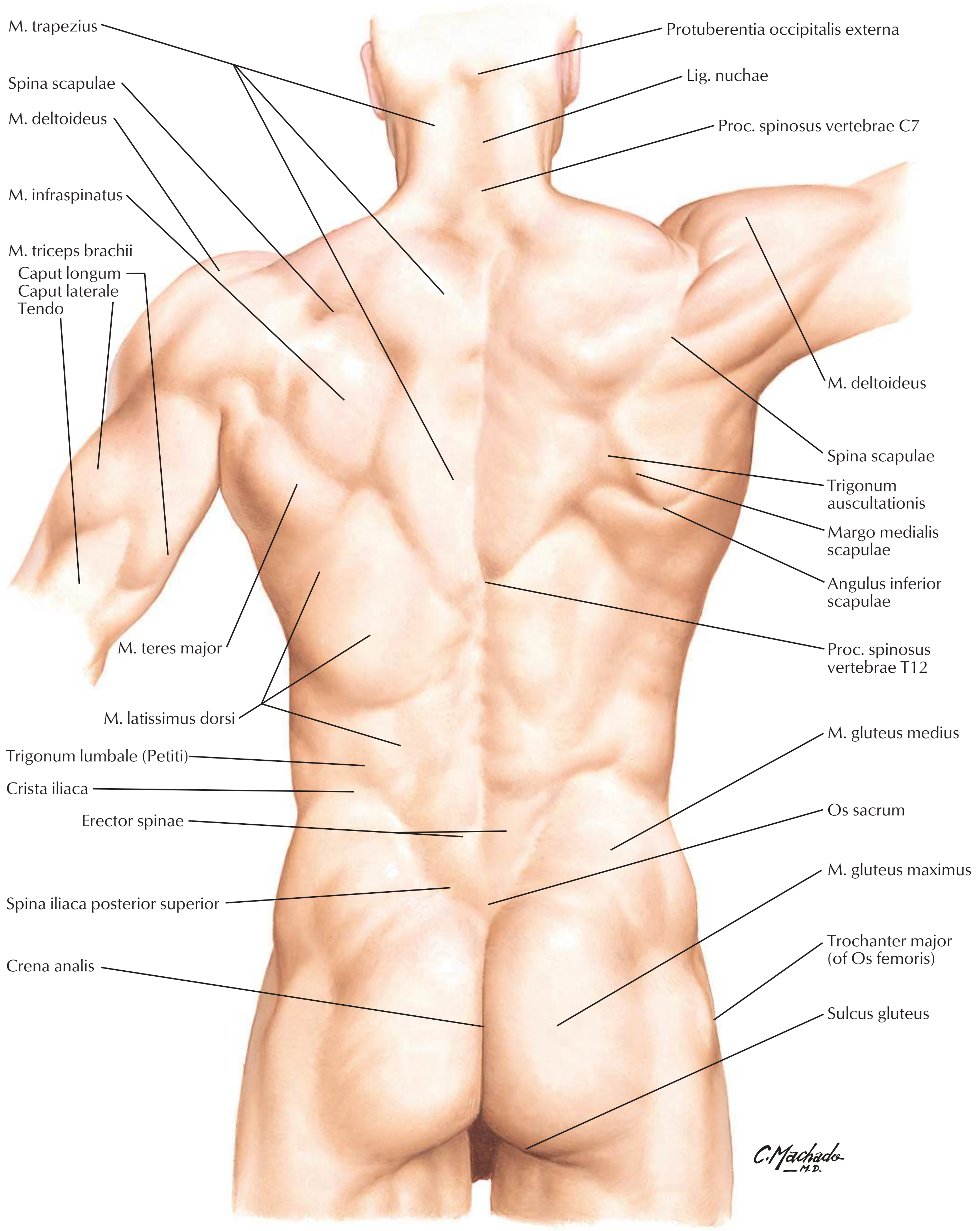
BP41 Cholinergic and Adrenergic Synapses: Schema

BP42 Vertebral Veins: Detail Showing Venous Communications

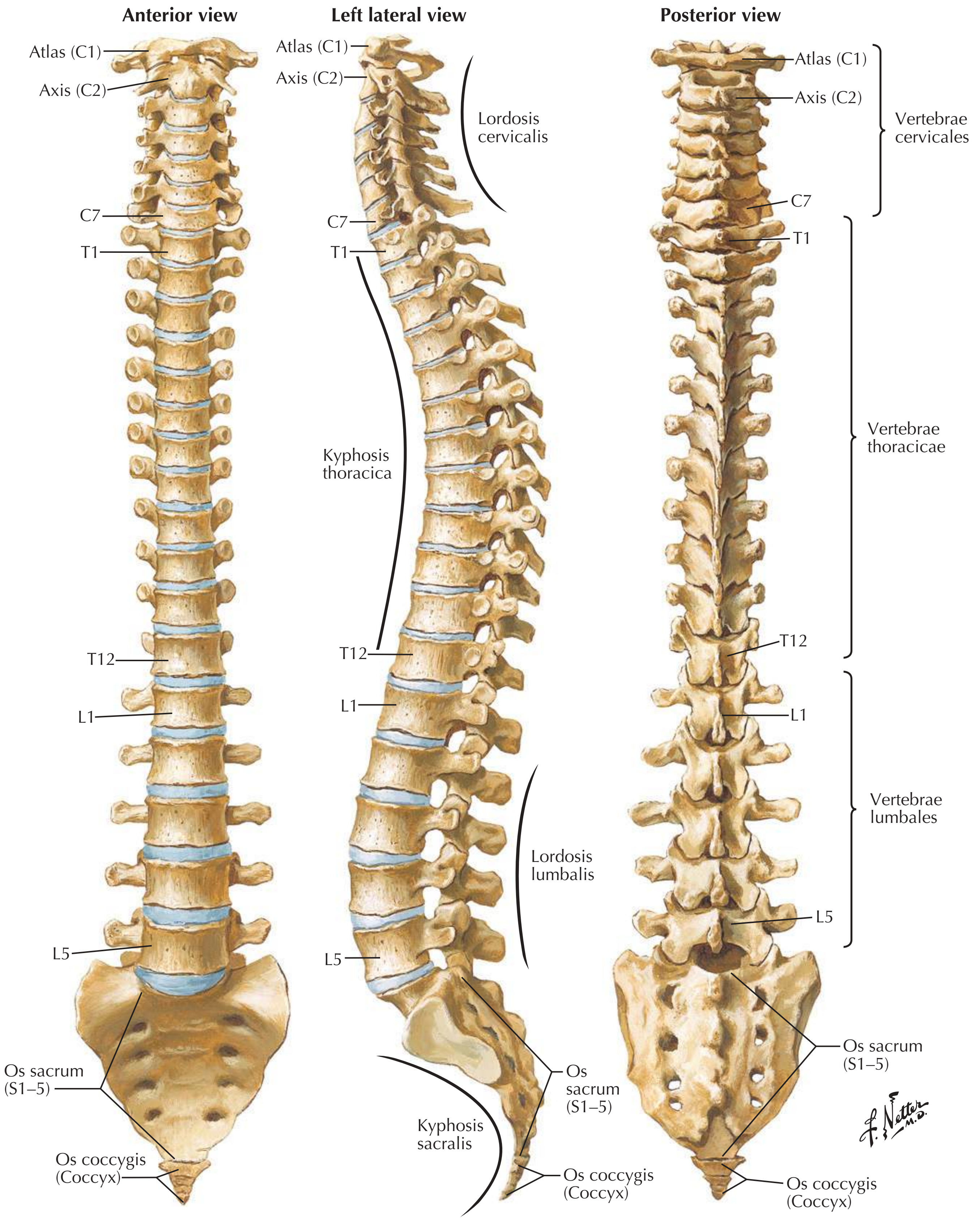


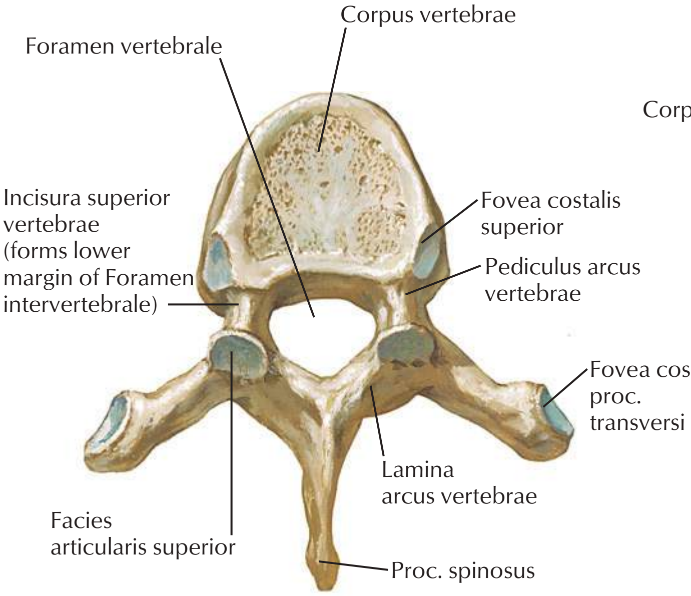
BP43 Spinal Cord Cross Sections: Fiber Tracts

See also Plates 162, 171, 180

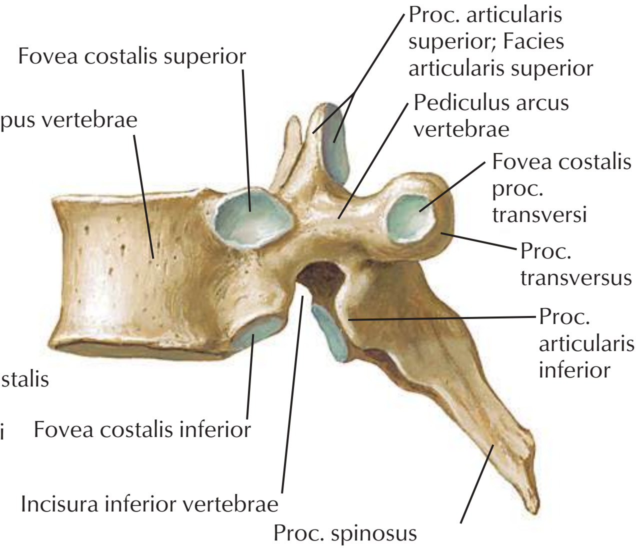

M. trapezius
Spina scapulae
M. deltoideus
M. infraspinatus
M. triceps brachii
Caput longum
Caput laterale
Tendo
M. teres major
M. latissimus dorsi
Trigonum lumbale (Petiti)
Crista iliaca
Erector spinae
Spina iliaca posterior superior
Crena analis
Protuberentia occipitalis externa
Lig. nuchae
Proc. spinosus vertebrae C7
M. deltoideus
Spina scapulae
Trigonum auscultationis
Margo medialis scapulae
Angulus inferior scapulae
Proc. spinosus vertebrae T12
M. gluteus medius
Os sacrum
M. gluteus maximus
Trochanter major (of Os femoris)
Sulcus gluteus
C.Machado M.D.

See also Plates 28, 192, 250

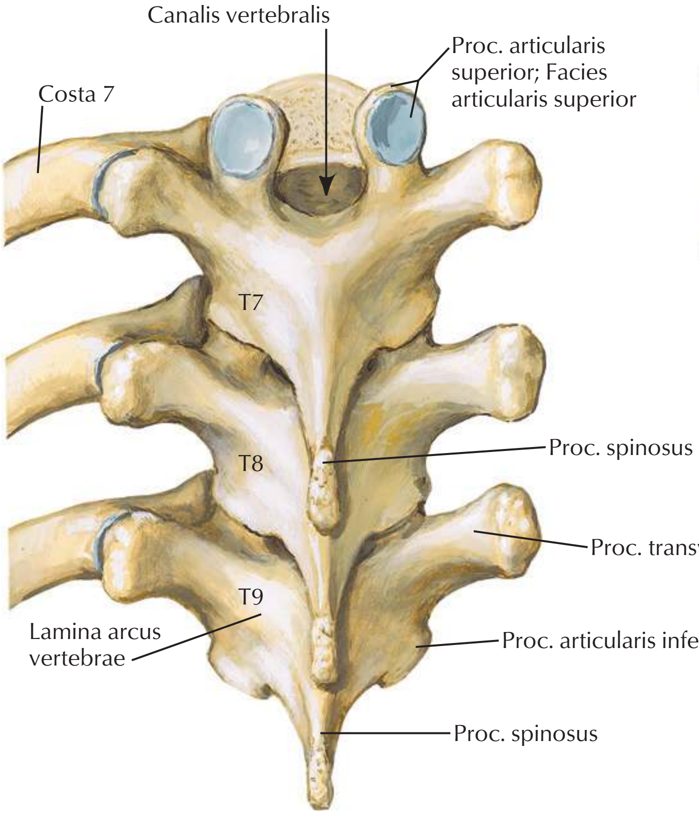

Anterior view
Atlas (C1)
Axis (C2)
C7
T1
T12
L1
L5
Os sacrum (S1–5)
Os coccygis (Coccyx)
Left lateral view
Atlas (C1)
Axis (C2)
Lordosis cervicalis
C7
T1
Kyphosis thoracica
T12
L1
Lordosis lumbalis
L5
Os sacrum (S1–5)
Kyphosis sacralis
Os coccygis (Coccyx)
Posterior view
Atlas (C1)
Axis (C2)
Vertebrae cervicales
C7
T1
Vertebrae thoracicae
T12
L1
Vertebrae lumbales
L5
Os sacrum (S1–5)
Os coccygis (Coccyx)
F. Netter M.D.


Foramen vertebrale
Corpus vertebrae
Incisura superior vertebrae (forms lower margin of Foramen intervertebrale)
Fovea costalis superior
Pediculus arcus vertebrae
Fovea costalis proc. transversi
Lamina arcus vertebrae
Facies articularis superior
Proc. spinosus

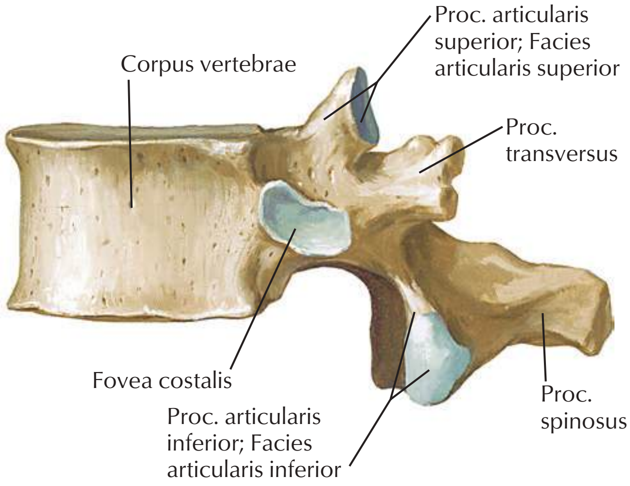
Vertebra T6: superior view


Proc. articularis superior; Facies articularis superior
Fovea costalis superior
Corpus vertebrae
Pediculus arcus vertebrae
Fovea costalis proc. transversi
Proc. transversus
Proc. articularis inferior
Fovea costalis inferior
Incisura inferior vertebrae
Proc. spinosus

Vertebra T6: lateral view


Canalis vertebralis
Proc. articularis superior; Facies articularis superior
Costa 7
T7
T8
Proc. spinosus
Proc. transversus
T9
Lamina arcus vertebrae
Proc. articularis inferior
Proc. spinosus

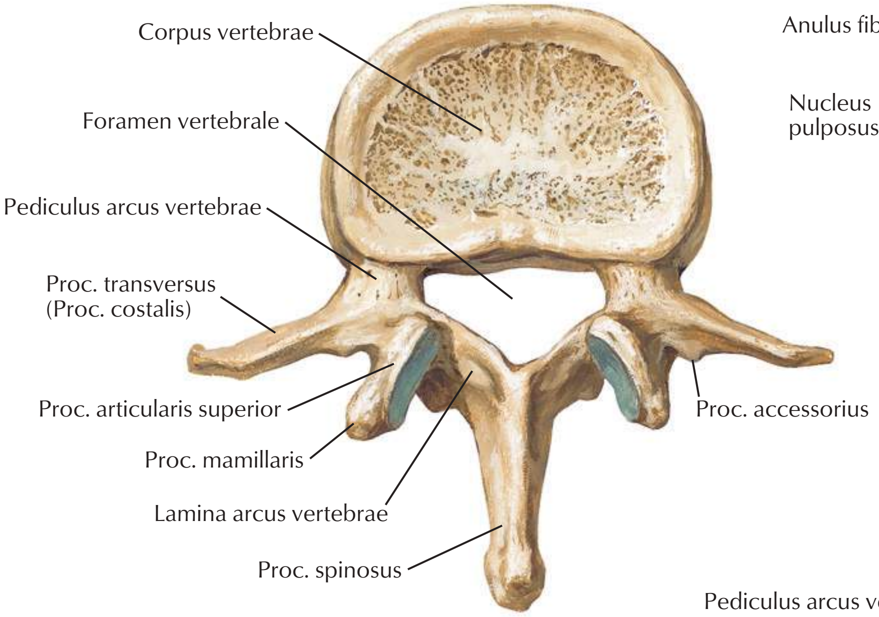
Vertebrae T7, T8, and T9: posterior view


Corpus vertebrae
Proc. articularis superior; Facies articularis superior
Proc. transversus
Fovea costalis
Proc. articularis inferior; Facies articularis inferior
Proc. spinosus

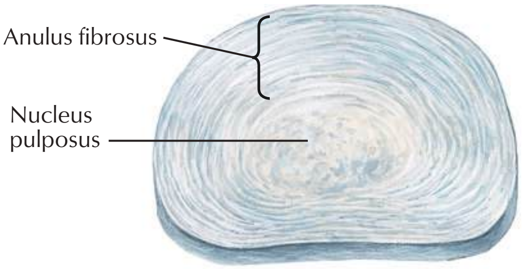
Vertebra T12: lateral view

F. Netter M.D.

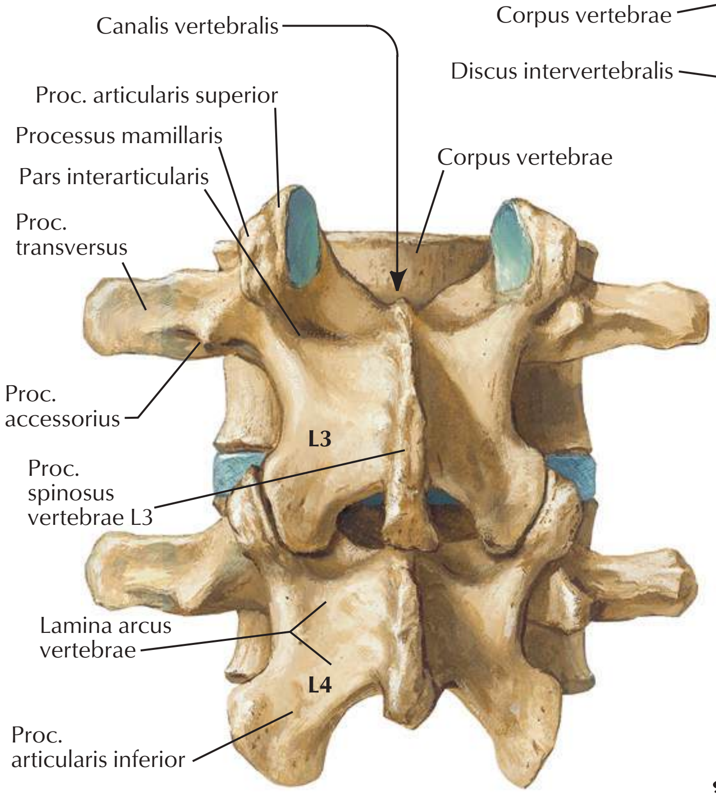
Lumbar Vertebrae


Corpus vertebrae
Foramen vertebrale
Pediculus arcus vertebrae
Proc. transversus
(Proc. costalis)
Proc. articularis superior
Proc. mamillaris
Lamina arcus vertebrae
Proc. spinosus
Proc. accessorius

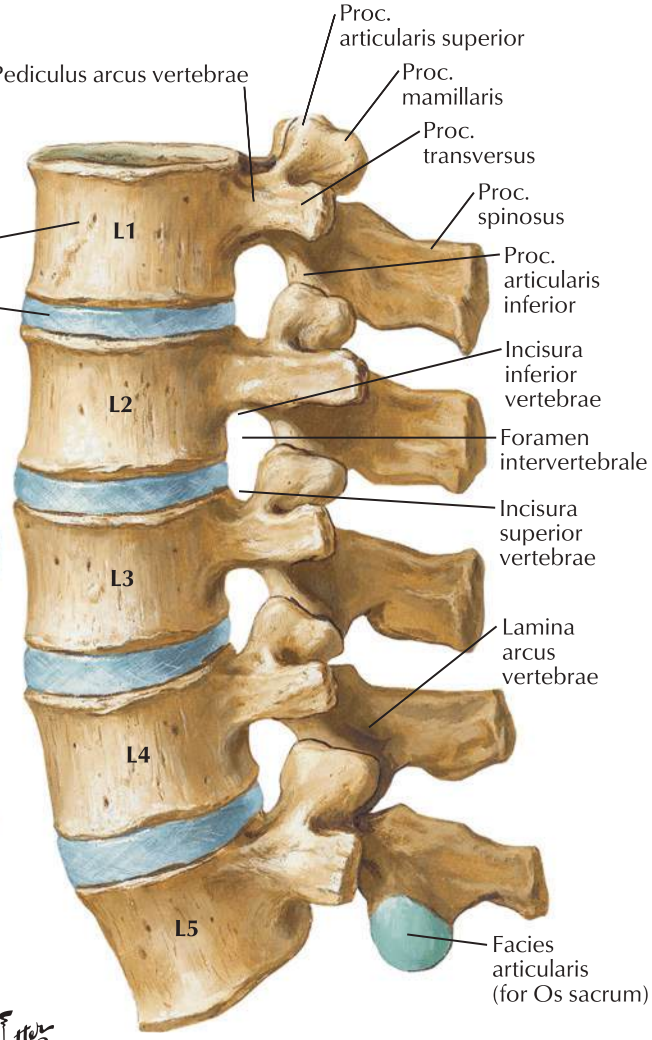
Vertebra L2:
superior view


Anulus fibrosus
Nucleus
pulposus

Discus intervertebralis


Canalis vertebralis
Proc. articularis superior
Processus mamillaris
Pars interarticularis
Proc.
transversus
Proc.
accessorius
Proc.
spinosus
vertebrae L3
Lamina arcus
vertebrae
Proc.
articularis inferior
Corpus vertebrae
L3
L4

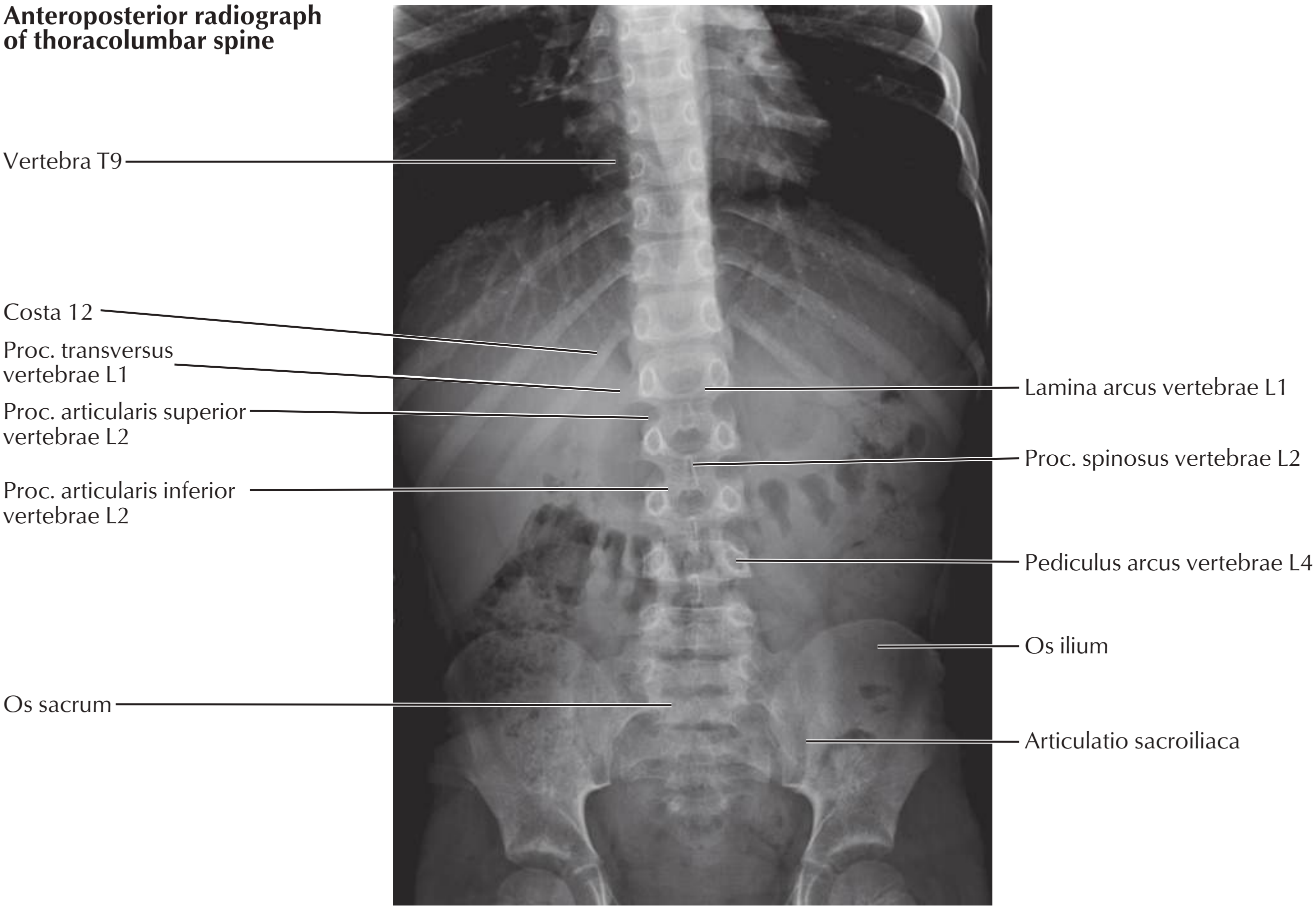
Vertebrae L3 and L4:
posterior view


Corpus vertebrae
Discus intervertebralis
Pediculus arcus vertebrae
Proc.
articularis superior
Proc.
mamillaris
Proc.
transversus
Proc.
spinosus
Proc.
articularis
inferior
Incisura
inferior
vertebrae
Foramen
intervertebrale
Incisura
superior
vertebrae
Lamina
arcus
vertebrae
Facies
articularis
(for Os sacrum)
L1
L2
L3
L4
L5

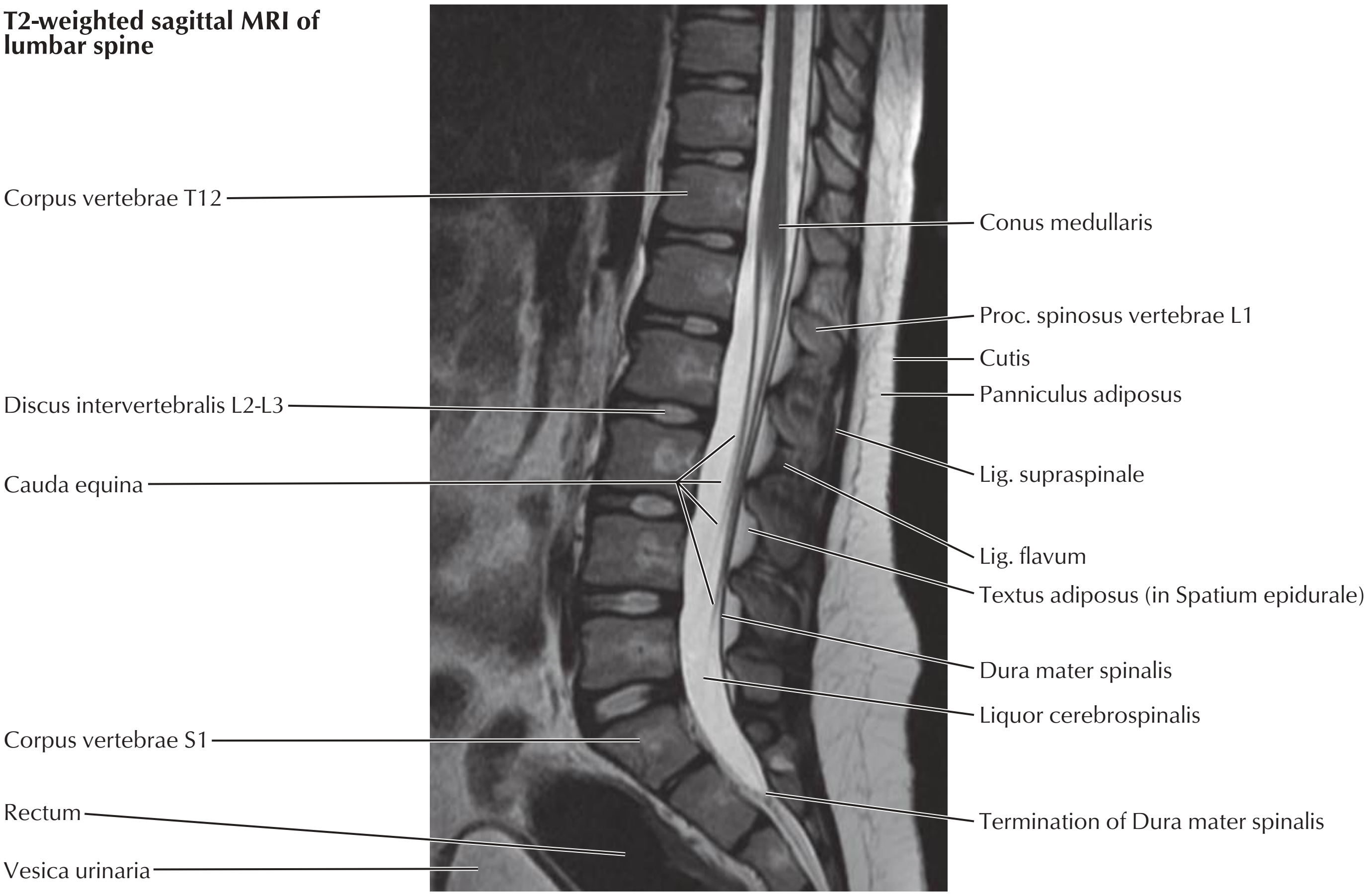
Vertebrae lumbales, articulated:
left lateral view

See also Plates 162, 250

Anteroposterior radiograph of thoracolumbar spine

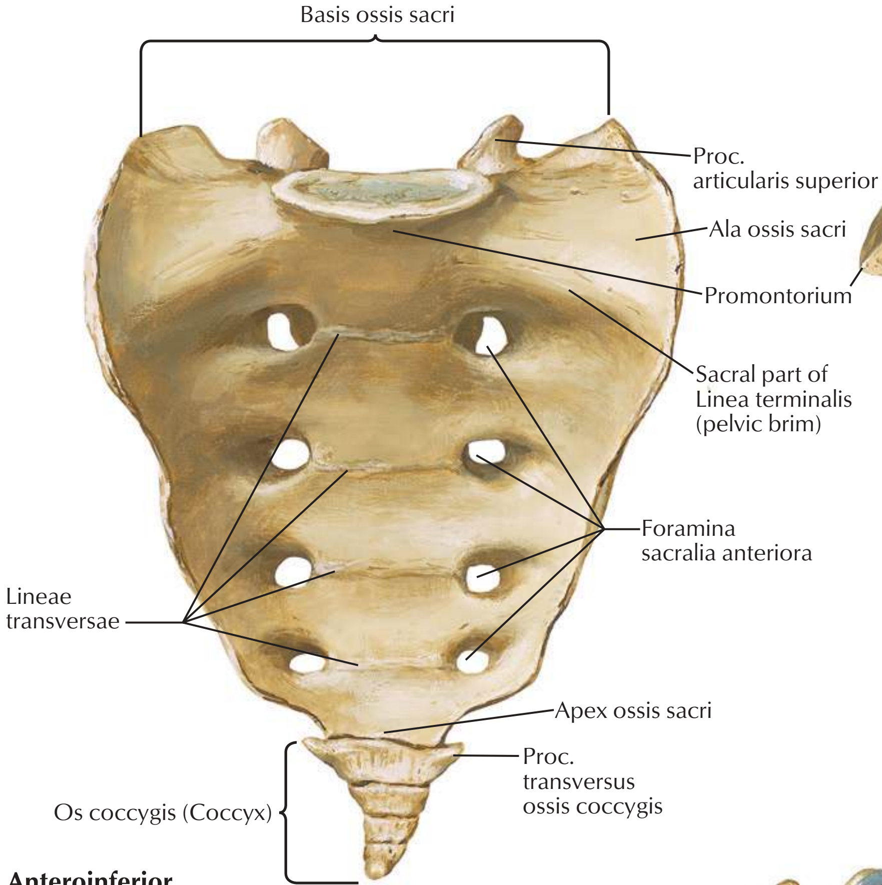

Vertebra T9
Costa 12
Proc. transversus vertebrae L1
Proc. articularis superior vertebrae L2
Proc. articularis inferior vertebrae L2
Os sacrum
Lamina arcus vertebrae L1
Proc. spinosus vertebrae L2
Pediculus arcus vertebrae L4
Os ilium
Articulatio sacroiliaca

T2-weighted sagittal MRI of lumbar spine


Corpus vertebrae T12
Discus intervertebralis L2-L3
Cauda equina
Corpus vertebrae S1
Rectum
Vesica urinaria
Conus medullaris
Proc. spinosus vertebrae L1
Cutis
Panniculus adiposus
Lig. supraspinale
Lig. flavum
Textus adiposus (in Spatium epidurale)
Dura mater spinalis
Liquor cerebrospinalis
Termination of Dura mater spinalis

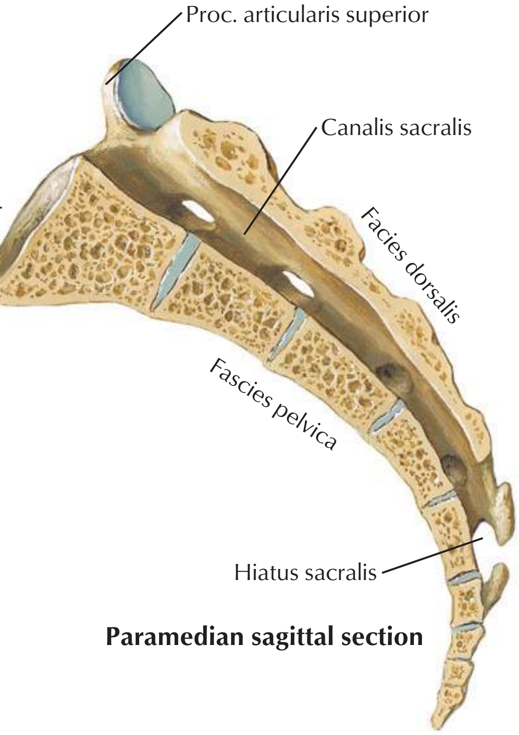
Sacrum and Coccyx

See also Plates 334, 338

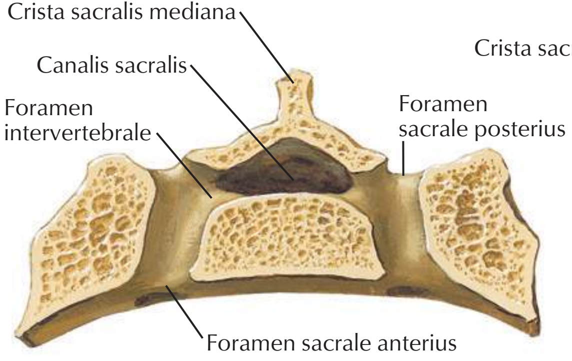

Basis ossis sacri
Proc. articularis superior
Ala ossis sacri
Promontorium
Sacral part of Linea terminalis (pelvic brim)
Foramina sacralia anteriora
Lineae transversae
Apex ossis sacri
Proc. transversus ossis coccygis
Os coccygis (Coccyx)

Anteroinferior view

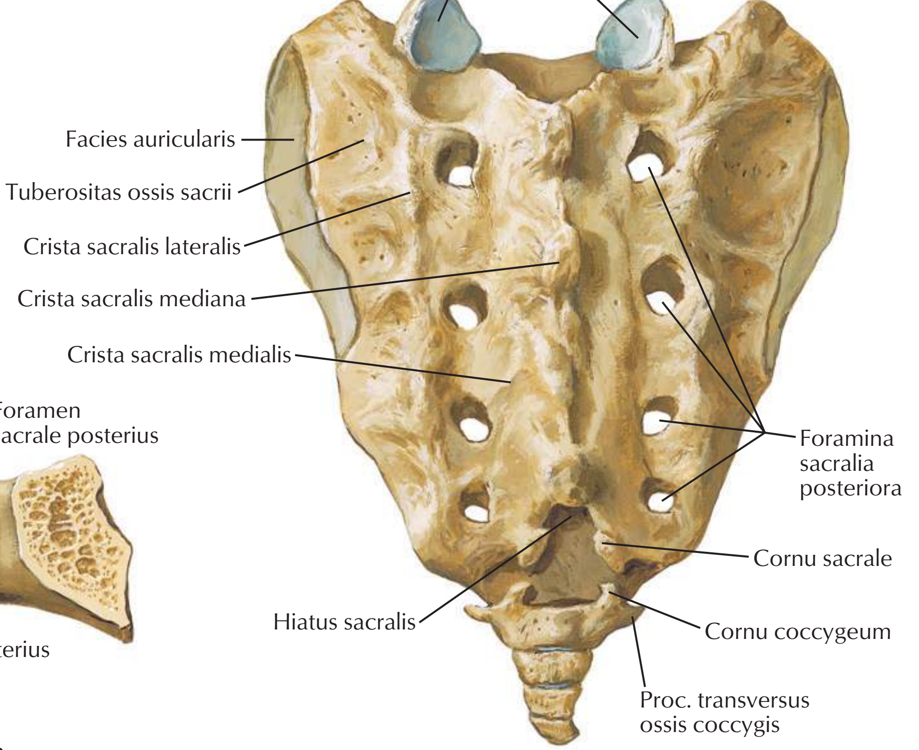
Facies pelvica


Proc. articularis superior
Canalis sacralis
Facies dorsalis
Fascies pelvica
Hiatus sacralis

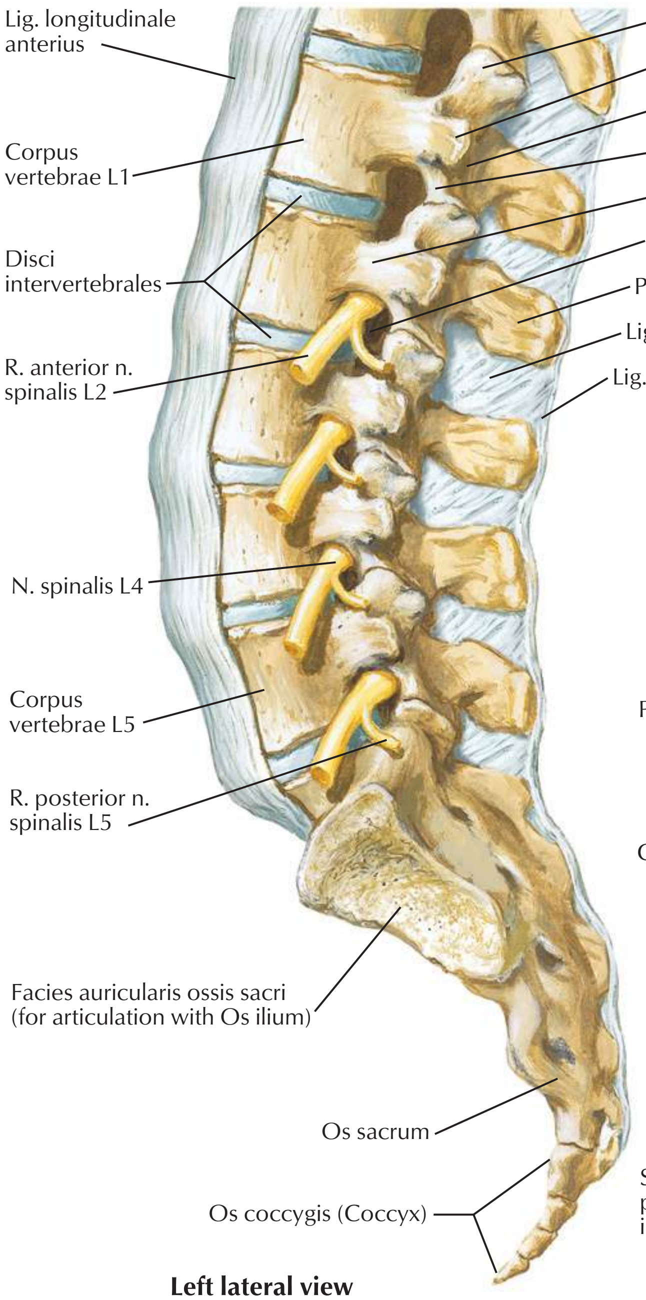
Paramedian sagittal section


Crista sacralis mediana
Canalis sacralis
Foramen intervertebrale
Foramen sacrale posterius
Foramen sacrale anterius

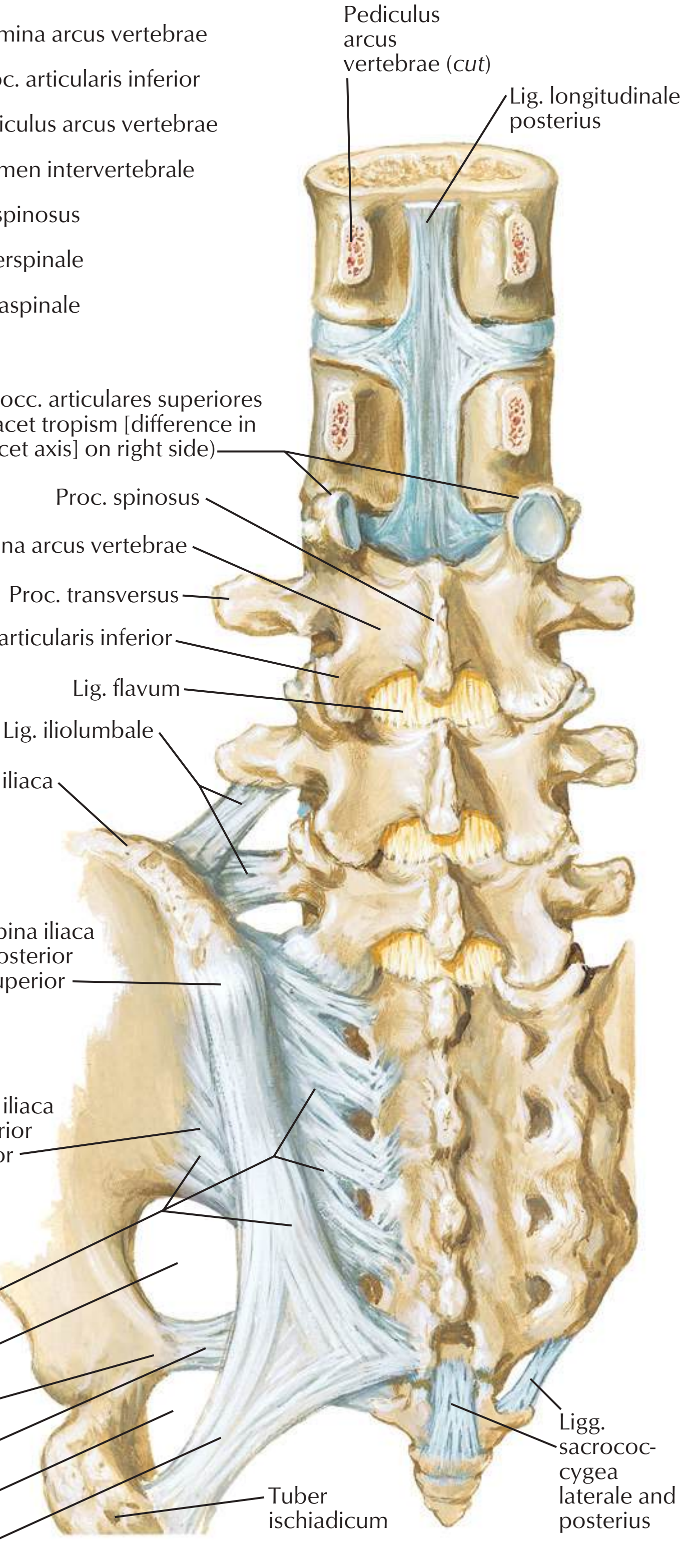
Transverse section through S2 foramina


Facies articulares superiores
Facies auricularis
Tuberositas ossis sacrii
Crista sacralis lateralis
Crista sacralis mediana
Crista sacralis medialis
Foramina sacralia posteriora
Cornu sacrale
Hiatus sacralis
Cornu coccygeum
Proc. transversus ossis coccygis

Posterosuperior view


Lig. longitudinale anterius
Corpus vertebrae L1
Disci intervertebrales
R. anterior n. spinalis L2
N. spinalis L4
Corpus vertebrae L5
R. posterior n. spinalis L5
Facies auricularis ossis sacri (for articulation with Os ilium)
Os sacrum
Os coccygis (Coccyx)
Proc. articularis superior
Proc. transversus
Lamina arcus vertebrae
Proc. articularis inferior
Pediculus arcus vertebrae
Foramen intervertebrale
Proc. spinosus
Lig. interspinale
Lig. supraspinale

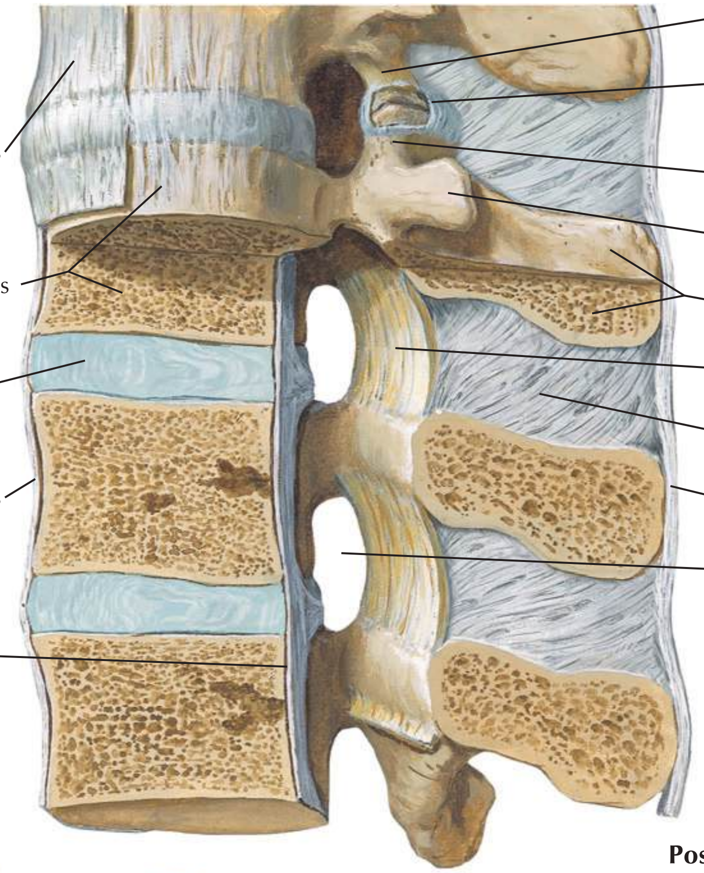
Left lateral view

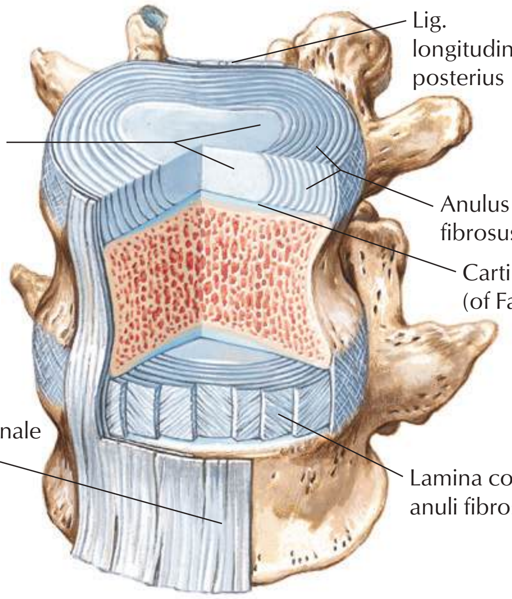

Pediculus arcus vertebrae (*cut*)
Lig. longitudinale posterius
Procc. articulares superiores (facet tropism [difference in facet axis] on right side)
Proc. spinosus
Lamina arcus vertebrae
Proc. transversus
Proc. articularis inferior
Lig. flavum
Lig. iliolumbale
Crista iliaca
Spina iliaca posterior superior
Spina iliaca posterior inferior
Lig. sacroiliacum posterius
Foramen ischiadicum majus
Spina ischiadica
Lig. sacrospinale
Foramen ischiadicum minus
Lig. sacrotuberale
Tuber ischiadicum
Ligg. sacrococcygea laterale and posterius
F. Netter M.D.

Posterior view

Vertebral Ligaments: Lumbar Region

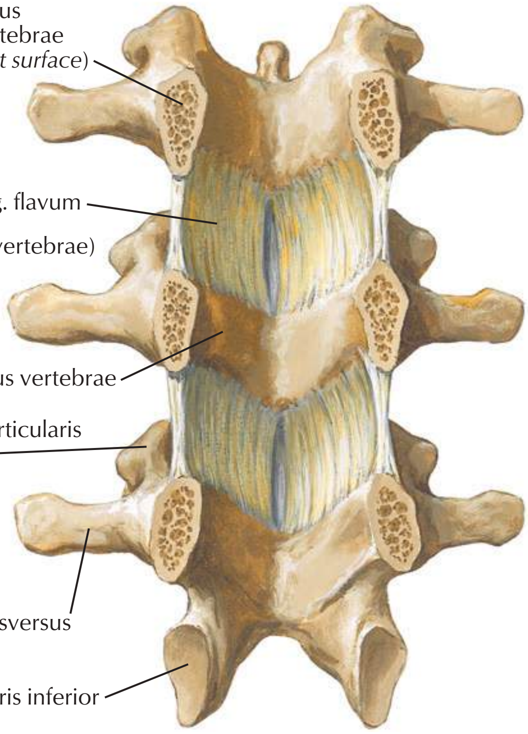
Left lateral view (*partially sectioned in median plane*)


Lig. longitudinale anterius
Corpus vertebrae lumbalis
Discus intervertebralis
Lig. longitudinale anterius
Lig. longitudinale posterius
Proc. articularis inferior
Capsula articulationis zygapophysialis (*partially opened*)
Proc. articularis superior
Proc. transversus
Proc. spinosus
Lig. flavum
Lig. interspinale
Lig. supraspinale
Foramen intervertebrale

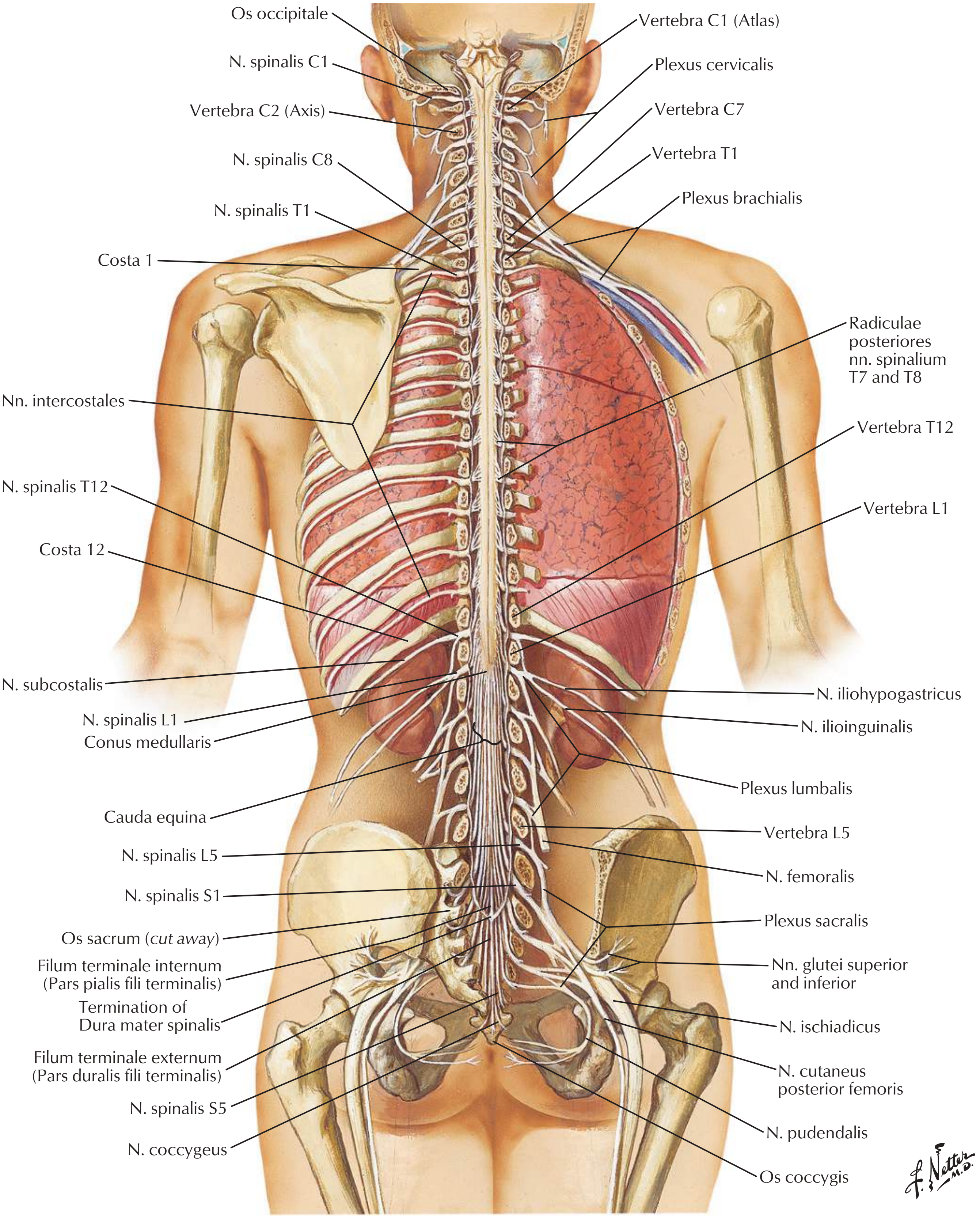

Lig. longitudinale posterius
Nucleus pulposus
Anulus fibrosus
Cartilago hyalina (of Facies intervertebralis vertebrae)
Lig. longitudinale anterius
Lamina collageni anuli fibrosi

Discus intervertebralis composed of central nuclear zone of collagen and hydrated proteoglycans surrounded by concentric layers (laminae) of collagen fibers

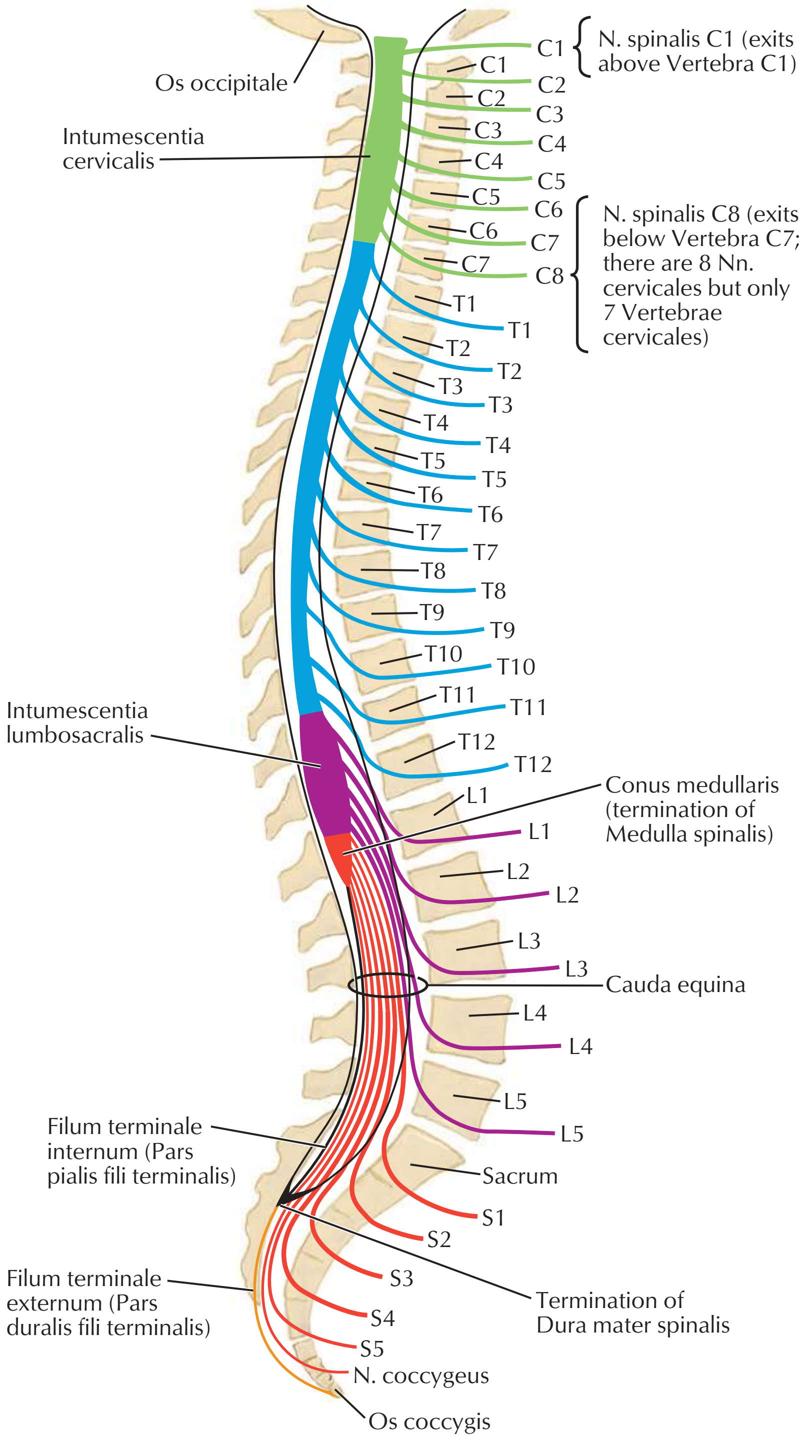
Posterior vertebral arches: anterior view


Pediculus arcus vertebrae (*cut surface*)
Lig. flavum
Lamina arcus vertebrae
Processus articularis superior
Proc. transversus
Facies articularis inferior

F. Netter M.D. C. Machado M.D.


Os occipitale
N. spinalis C1
Vertebra C2 (Axis)
N. spinalis C8
N. spinalis T1
Costa 1
Nn. intercostales
N. spinalis T12
Costa 12
N. subcostalis
N. spinalis L1
Conus medullaris
Cauda equina
N. spinalis L5
N. spinalis S1
Os sacrum (*cut away*)
Filum terminale internum
(Pars pialis fili terminalis)
Termination of
Dura mater spinalis
Filum terminale externum
(Pars duralis fili terminalis)
N. spinalis S5
N. coccygeus
Vertebra C1 (Atlas)
Plexus cervicalis
Vertebra C7
Vertebra T1
Plexus brachialis
Radiculae
posteriores
nn. spinalium
T7 and T8
Vertebra T12
Vertebra L1
N. iliohypogastricus
N. ilioinguinalis
Plexus lumbalis
Vertebra L5
N. femoralis
Plexus sacralis
Nn. glutei superior
and inferior
N. ischiadicus
N. cutaneus
posterior femoris
N. pudendalis
Os coccygis
F. Netter M.D.

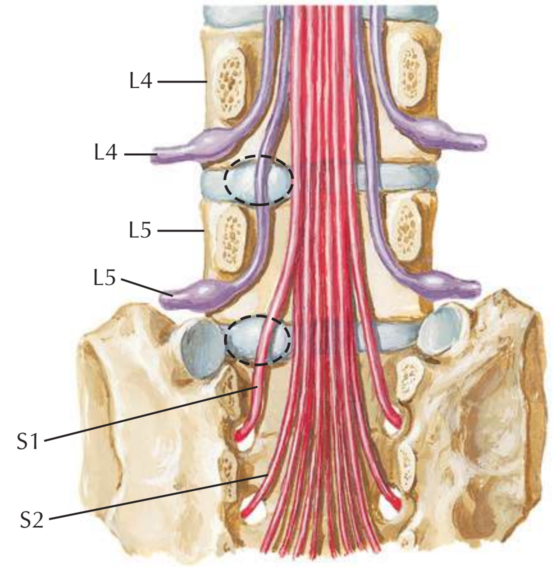
Relation of Spinal Nerve Roots to Vertebrae


Os occipitale
Intumescentia cervicalis
C1
C1
C2
C2
C3
C3
C4
C4
C5
C5
C6
C6
C7
C7
C8
T1
T1
T2
T2
T3
T3
T4
T4
T5
T5
T6
T6
T7
T7
T8
T8
T9
T9
T10
T10
T11
T11
T12
T12
Intumescentia lumbosacralis
L1
L1
Conus medullaris (termination of Medulla spinalis)
L2
L2
L3
L3
Cauda equina
L4
L4
L5
L5
Filum terminale internum (Pars pialis fili terminalis)
Sacrum
S1
S2
S3
Filum terminale externum (Pars duralis fili terminalis)
Termination of Dura mater spinalis
S4
S5
N. coccygeus
Os coccygis

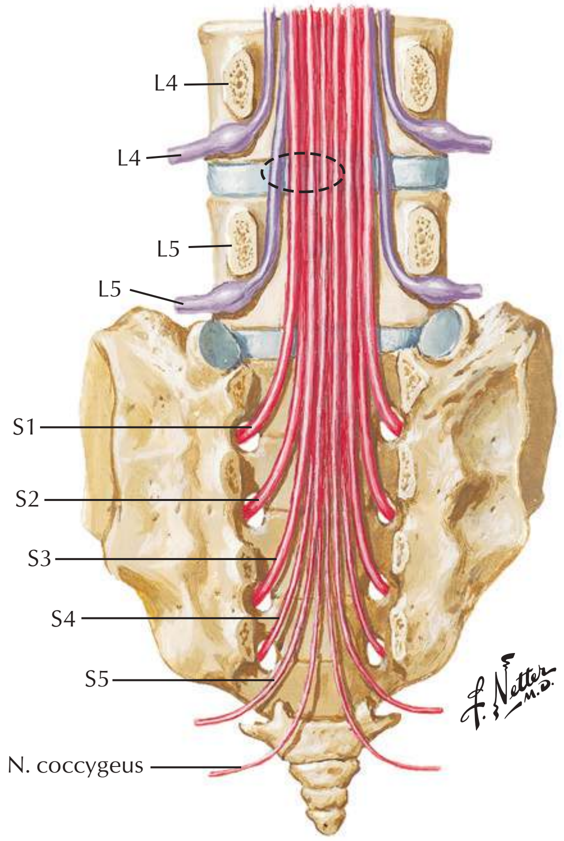
N. spinalis C1 (exits above Vertebra C1)

N. spinalis C8 (exits below Vertebra C7; there are 8 Nn. cervicales but only 7 Vertebrae cervicales)

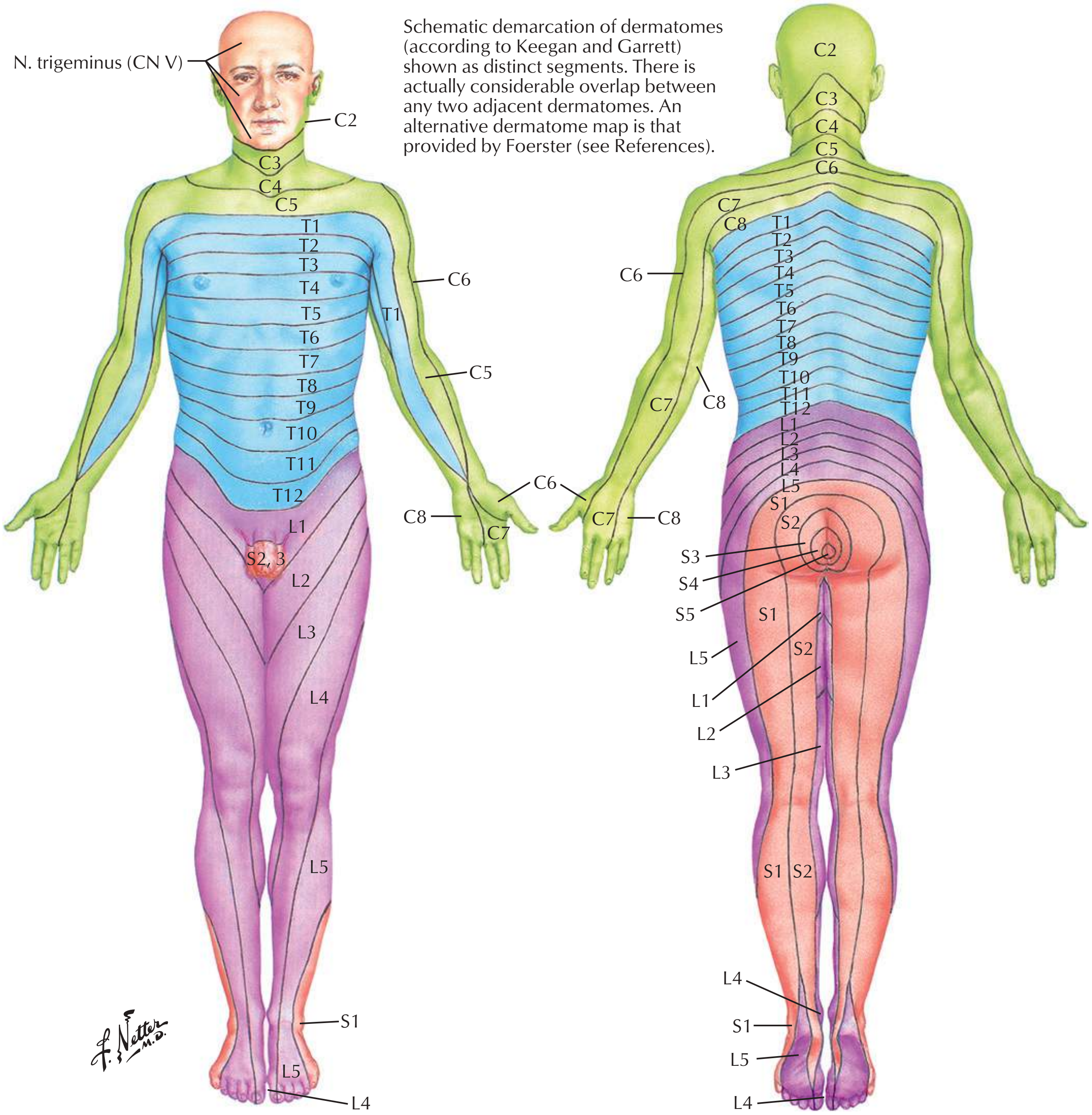
🟩 **Nn. cervicales**
🟦 **Nn. thoracici**
🟪 **Nn. lumbales**
🟥 **Nn. sacrales and N. coccygeus**


L4
L4
L5
L5
S1
S2

Lumbar disc protrusion (*dashed ovals*) does not usually affect nerve exiting above disc. Lateral protrusion at disc level L4–L5 affects N. spinalis L5, not N. spinalis L4. Protrusion at disc level L5–S1 affects N. spinalis S1, not N. spinalis L5.


L4
L4
L5
L5
S1
S2
S3
S4
S5
N. coccygeus
F. Netter M.D.

Medial protrusion at disc level L4–5 (*dashed oval*) rarely affects N. spinalis L4, but might affect N. spinalis L5 and sometimes Nn. spinales S1-4.


N. trigeminus (CN V)
C2
C3
C4
C5
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
L1
S2, 3
L2
L3
L4
L5
S1
L5
L4
C6
T1
C5
C6
C8
C7
C2
C3
C4
C5
C6
C7
C8
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
L1
L2
L3
L4
L5
S1
S2
C6
C7
C8
C7
C8
S3
S4
S5
S1
L5
S2
L1
L2
L3
S1
S2
L4
S1
L5
L4

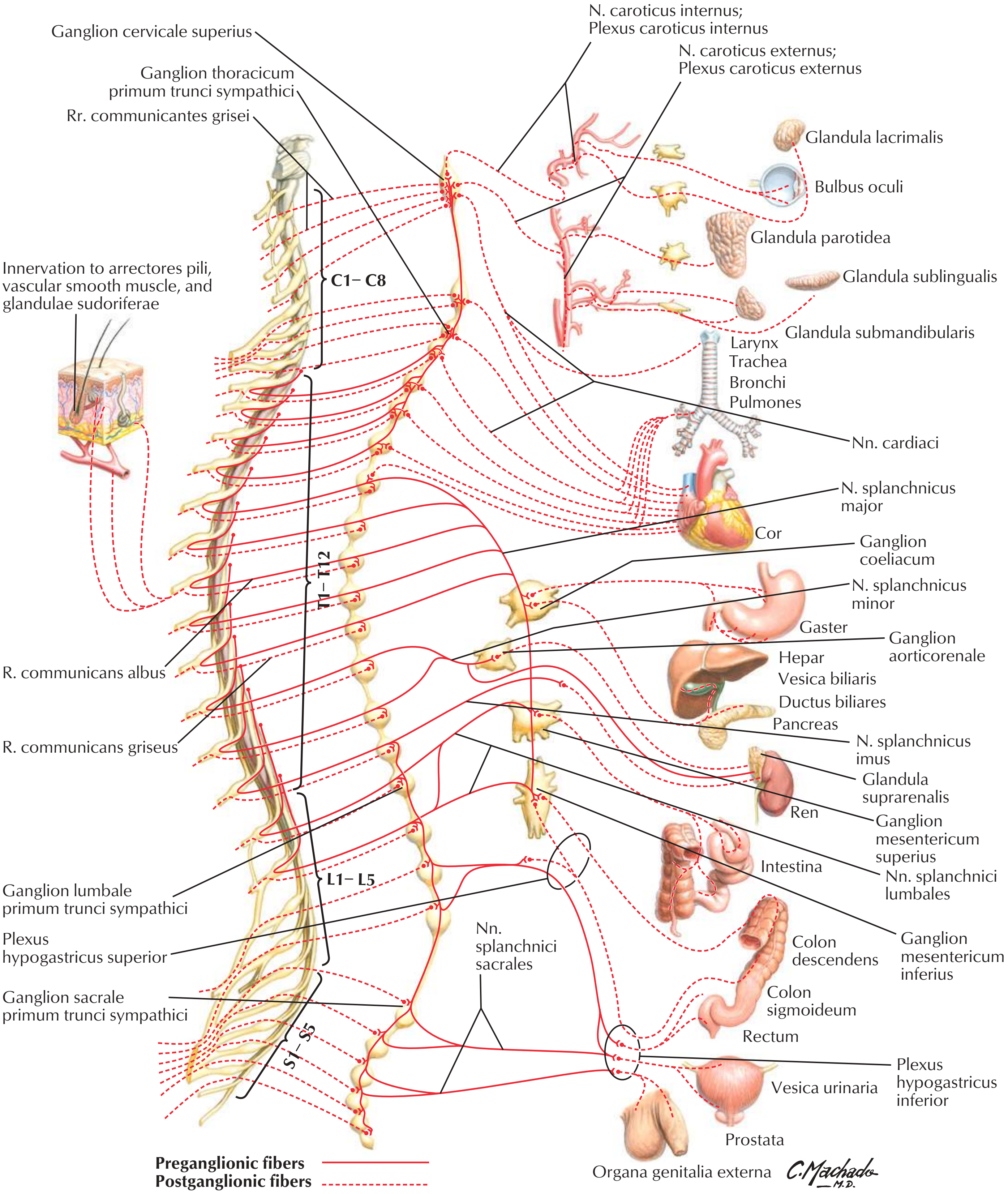
Schematic demarcation of dermatomes (according to Keegan and Garrett) shown as distinct segments. There is actually considerable overlap between any two adjacent dermatomes. An alternative dermatome map is that provided by Foerster (see References).

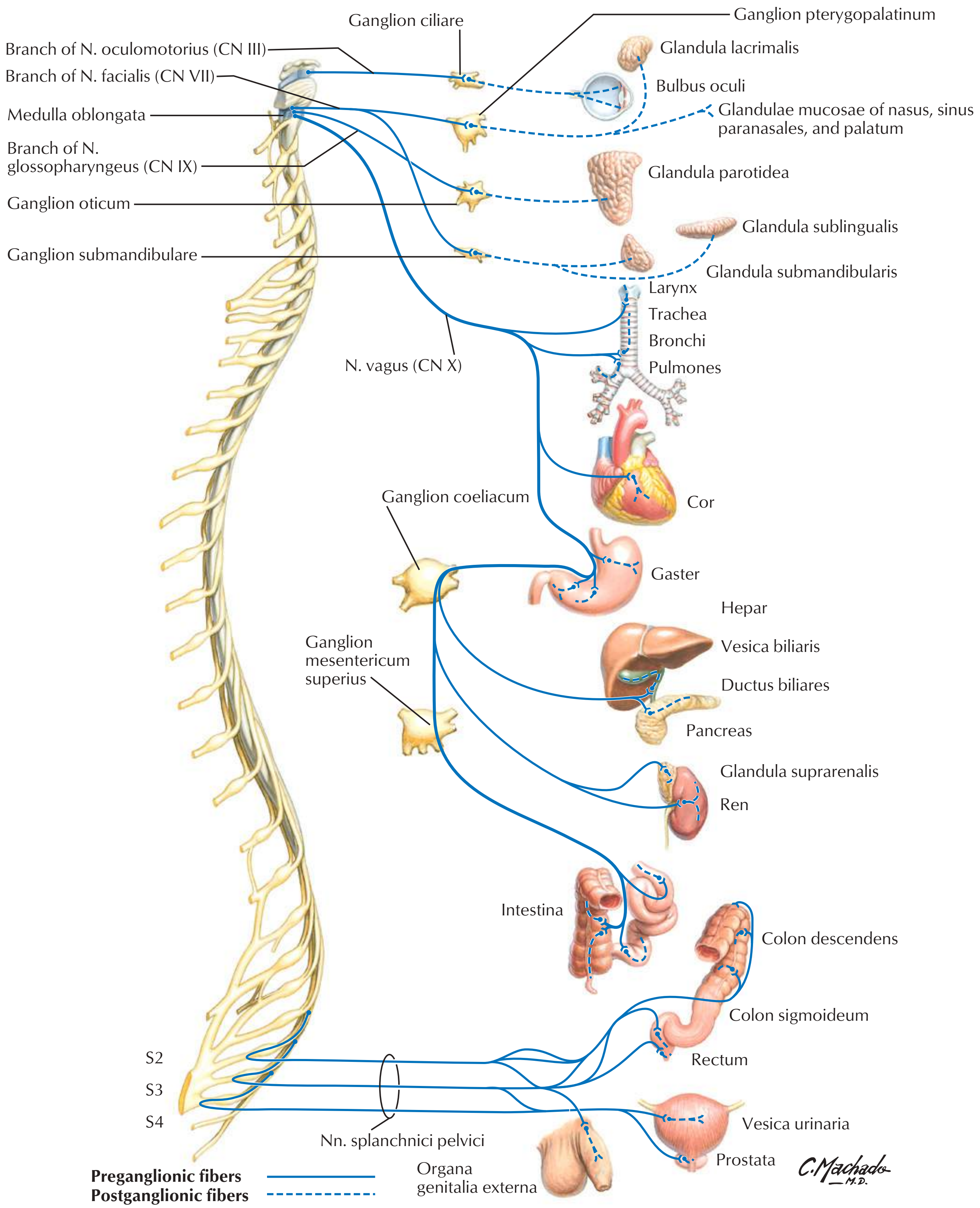
Levels of principal dermatomes

C5	Level of clavicles
C5, 6	Lateral sides of upper limbs
C8, T1	Medial sides of upper limbs
C6	Digit I (Pollex)
C6, 7, 8	Hand (Manus)
C8	Digits IV and V (ring and little fingers)
T4	Level of nipples
T10	Level of umbilicus
L1	Inguinal region
L1, 2, 3, 4	Anterior and medial surfaces of lower limbs
L4, 5, S1	Foot (Pes)
L4	Medial side of digit I (Hallux)
L5, S1, 2	Lateral and posterior surfaces of lower limbs
S1	Lateral margin of foot and digit V (little toe)
S2, 3, 4	Perineum

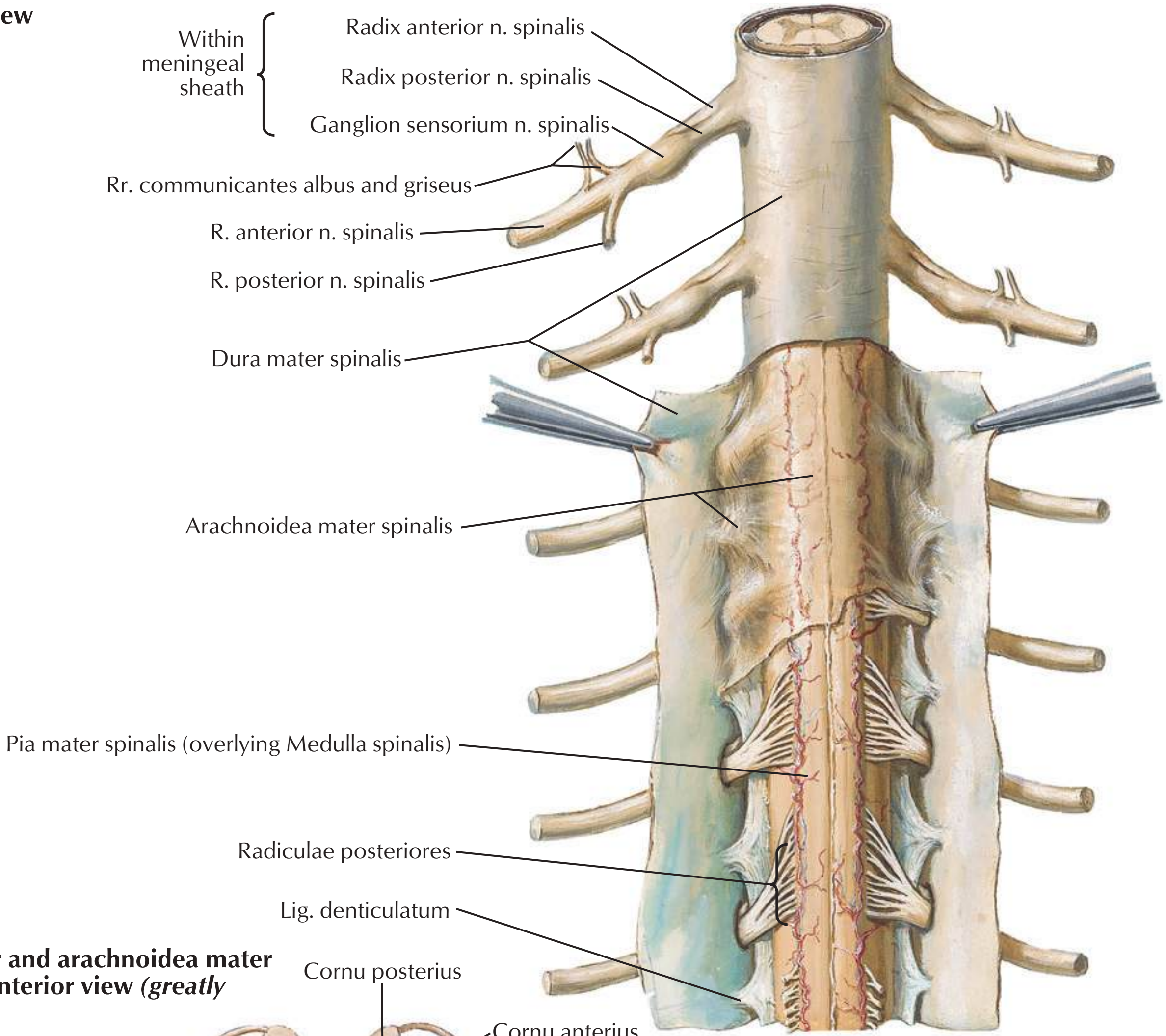
Sympathetic Nervous System: Schema

See also Plates 213, 320, 322

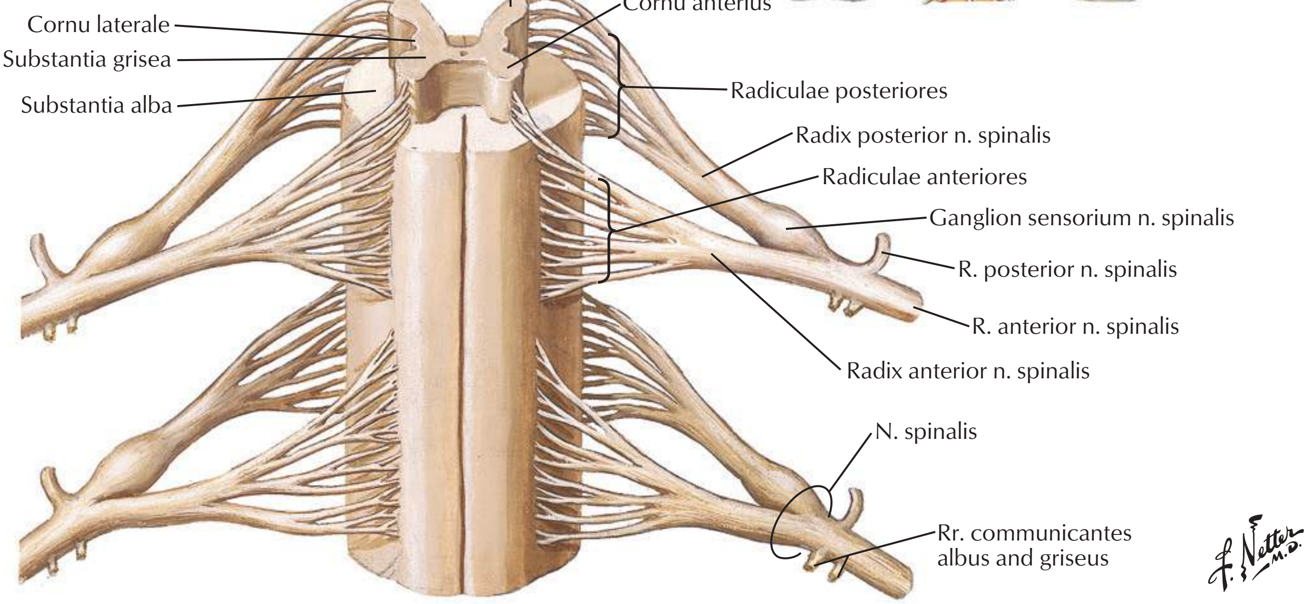

N. caroticus internus; Plexus caroticus internus
N. caroticus externus; Plexus caroticus externus
Ganglion cervicale superius
Ganglion thoracicum primum trunci sympathici
Rr. communicantes grisei
Glandula lacrimalis
Bulbus oculi
Glandula parotidea
Glandula sublingualis
Innervation to arrectores pili, vascular smooth muscle, and glandulae sudoriferae
C1– C8
Glandula submandibularis
Larynx
Trachea
Bronchi
Pulmones
Nn. cardiaci
N. splanchnicus major
Cor
T1– T12
Ganglion coeliacum
N. splanchnicus minor
Gaster
Ganglion aorticorenale
Hepar
Vesica biliaris
Ductus biliares
R. communicans albus
Pancreas
R. communicans griseus
N. splanchnicus imus
Glandula suprarenalis
Ren
Ganglion mesentericum superius
Intestina
L1– L5
Nn. splanchnici lumbales
Ganglion lumbale primum trunci sympathici
Plexus hypogastricus superior
Nn. splanchnici sacrales
Colon descendens
Ganglion mesentericum inferius
Colon sigmoideum
Ganglion sacrale primum trunci sympathici
Rectum
S1– S5
Plexus hypogastricus inferior
Vesica urinaria
Prostata
Organa genitalia externa
Preganglionic fibers
Postganglionic fibers


Ganglion ciliare
Ganglion pterygopalatinum
Branch of N. oculomotorius (CN III)
Branch of N. facialis (CN VII)
Glandula lacrimalis
Bulbus oculi
Medulla oblongata
Glandulae mucosae of nasus, sinus paranasales, and palatum
Branch of N. glossopharyngeus (CN IX)
Glandula parotidea
Ganglion oticum
Glandula sublingualis
Ganglion submandibulare
Glandula submandibularis
Larynx
Trachea
Bronchi
N. vagus (CN X)
Pulmones
Ganglion coeliacum
Cor
Gaster
Hepar
Ganglion mesentericum superius
Vesica biliaris
Ductus biliares
Pancreas
Glandula suprarenalis
Ren
Intestina
Colon descendens
Colon sigmoideum
S2
Rectum
S3
S4
Vesica urinaria
Nn. splanchnici pelvici
Prostata
Organa genitalia externa
C. Machado M.D.
Preganglionic fibers
Postganglionic fibers

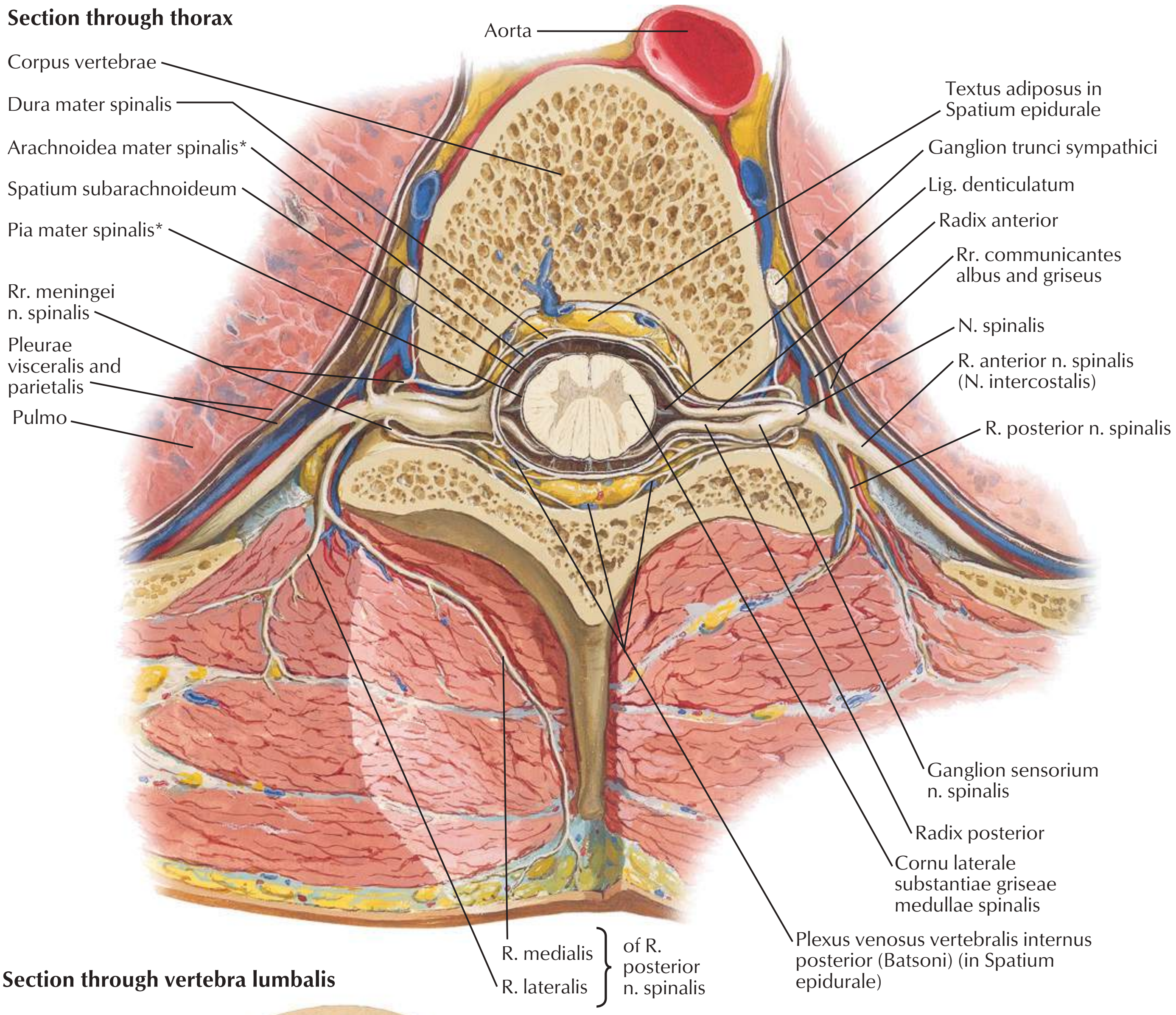
Posterior view


Within meningeal sheath
Radix anterior n. spinalis
Radix posterior n. spinalis
Ganglion sensorium n. spinalis
Rr. communicantes albus and griseus
R. anterior n. spinalis
R. posterior n. spinalis
Dura mater spinalis
Arachnoidea mater spinalis
Pia mater spinalis (overlying Medulla spinalis)
Radiculae posteriores
Lig. denticulatum

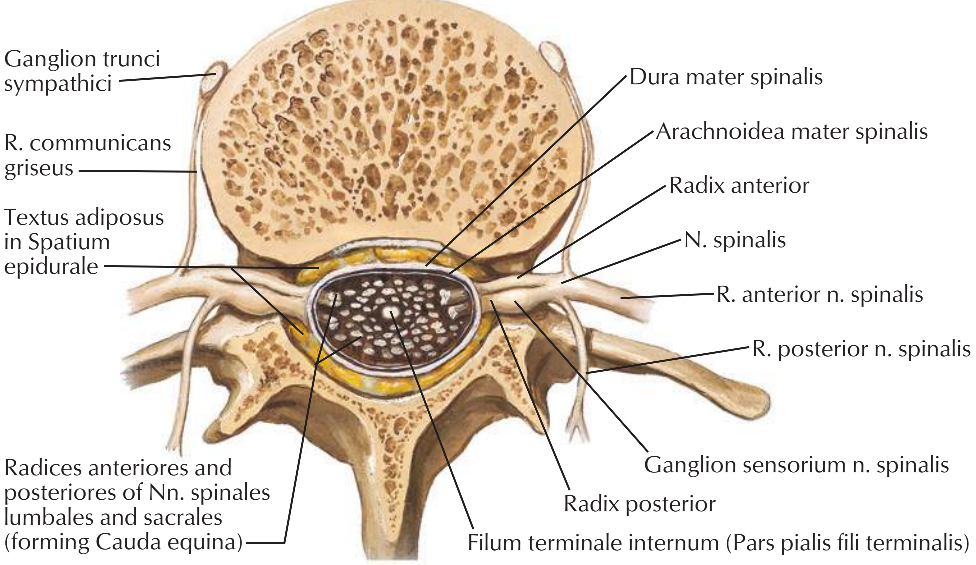
Dura mater and arachnoidea mater removed: anterior view *(greatly magnified)*


Cornu posterius
Cornu anterius
Cornu laterale
Substantia grisea
Substantia alba
Radiculae posteriores
Radix posterior n. spinalis
Radiculae anteriores
Ganglion sensorium n. spinalis
R. posterior n. spinalis
R. anterior n. spinalis
Radix anterior n. spinalis
N. spinalis
Rr. communicantes albus and griseus

Section through thorax

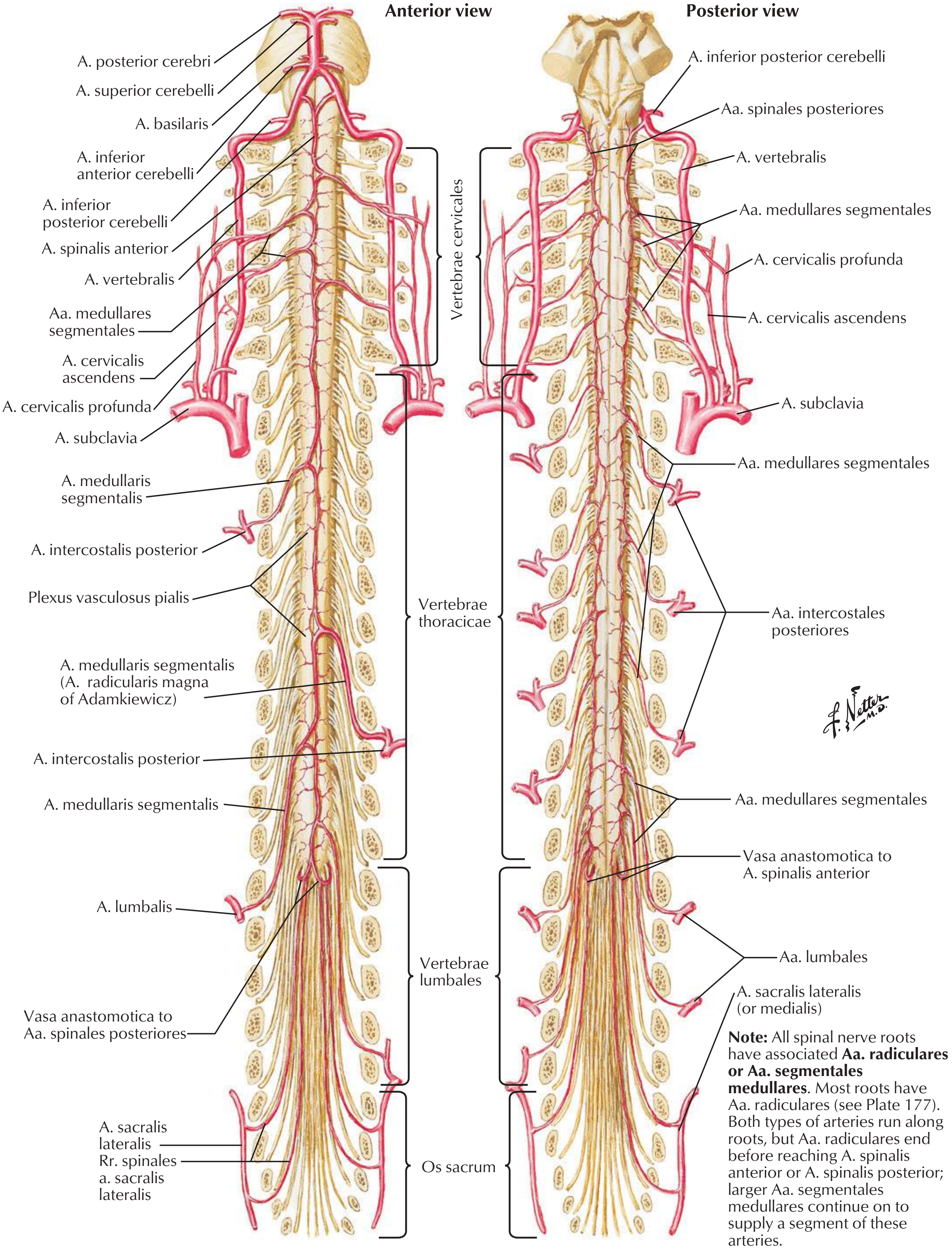

Corpus vertebrae
Dura mater spinalis
Arachnoidea mater spinalis*
Spatium subarachnoideum
Pia mater spinalis*
Rr. meningei n. spinalis
Pleurae visceralis and parietalis
Pulmo
Aorta
Textus adiposus in Spatium epidurale
Ganglion trunci sympathici
Lig. denticulatum
Radix anterior
Rr. communicantes albus and griseus
N. spinalis
R. anterior n. spinalis (N. intercostalis)
R. posterior n. spinalis
Ganglion sensorium n. spinalis
Radix posterior
Cornu laterale substantiae griseae medullae spinalis
Plexus venosus vertebralis internus posterior (Batsoni) (in Spatium epidurale)
R. medialis
R. lateralis
of R. posterior n. spinalis

Section through vertebra lumbalis


Ganglion trunci sympathici
R. communicans griseus
Textus adiposus in Spatium epidurale
Radices anteriores and posteriores of Nn. spinales lumbales and sacrales (forming Cauda equina)
Dura mater spinalis
Arachnoidea mater spinalis
Radix anterior
N. spinalis
R. anterior n. spinalis
R. posterior n. spinalis
Ganglion sensorium n. spinalis
Radix posterior
Filum terminale internum (Pars pialis fili terminalis)

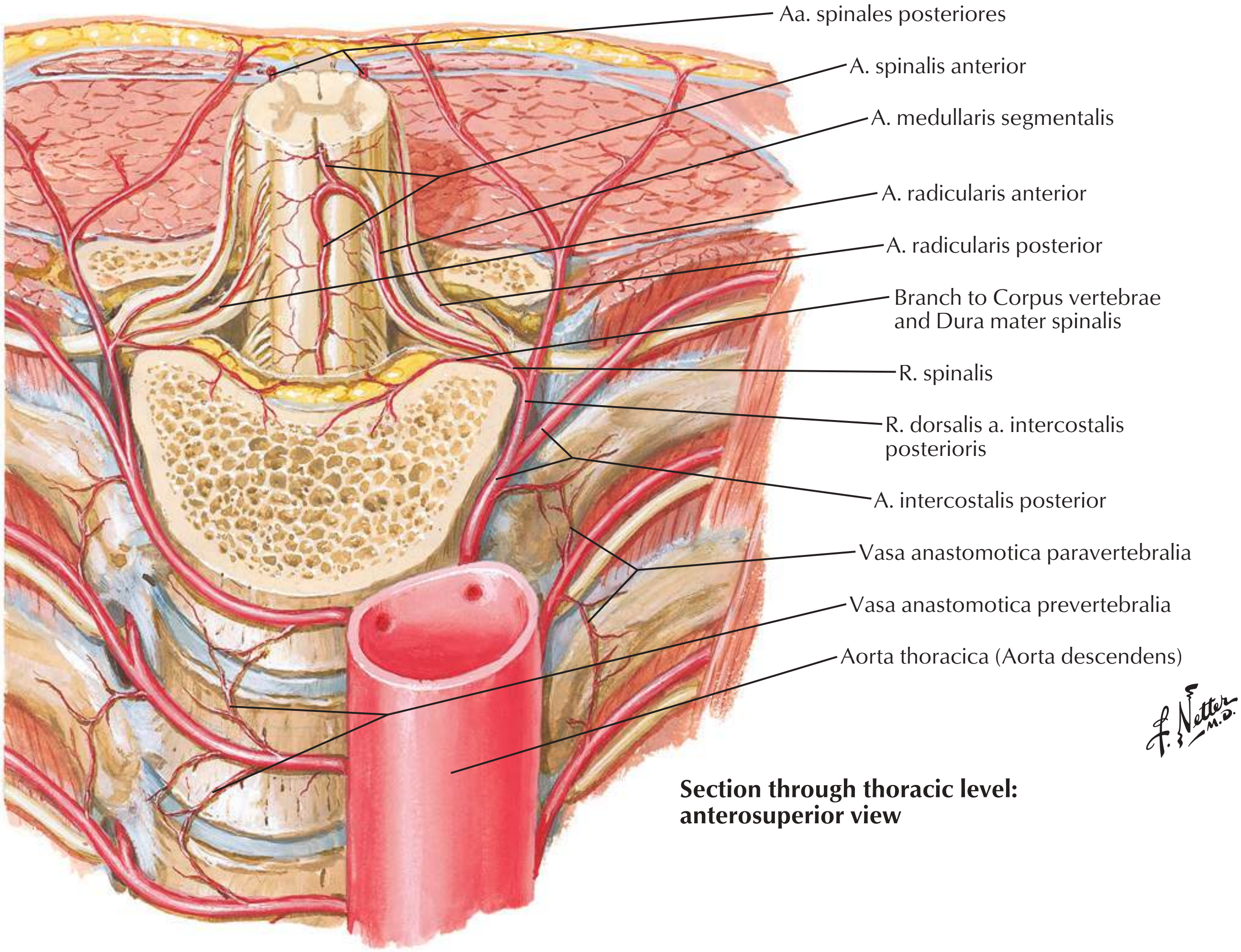
*Leptomeninges

Arteries of Spinal Cord: Schema

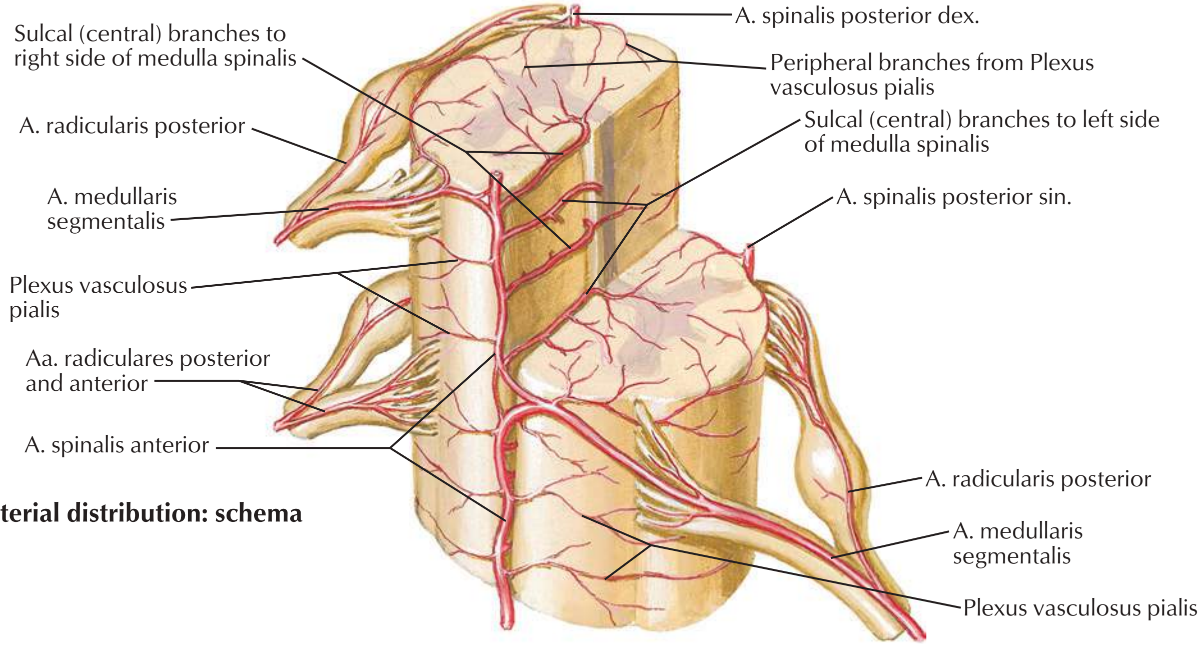

Anterior view
A. posterior cerebri
A. superior cerebelli
A. basilaris
A. inferior anterior cerebelli
A. inferior posterior cerebelli
A. spinalis anterior
A. vertebralis
Aa. medullares segmentales
A. cervicalis ascendens
A. cervicalis profunda
A. subclavia
A. medullaris segmentalis
A. intercostalis posterior
Plexus vasculosus pialis
A. medullaris segmentalis (A. radicularis magna of Adamkiewicz)
A. intercostalis posterior
A. medullaris segmentalis
A. lumbalis
Vasa anastomotica to Aa. spinales posteriores
A. sacralis lateralis
Rr. spinales a. sacralis lateralis
Vertebrae cervicales
Vertebrae thoracicae
Vertebrae lumbales
Os sacrum
Posterior view
A. inferior posterior cerebelli
Aa. spinales posteriores
A. vertebralis
Aa. medullares segmentales
A. cervicalis profunda
A. cervicalis ascendens
A. subclavia
Aa. medullares segmentales
Aa. intercostales posteriores
Aa. medullares segmentales
Vasa anastomotica to A. spinalis anterior
Aa. lumbales
A. sacralis lateralis (or medialis)

Note: All spinal nerve roots have associated **Aa. radiculares or Aa. segmentales medullares**. Most roots have Aa. radiculares (see Plate 177). Both types of arteries run along roots, but Aa. radiculares end before reaching A. spinalis anterior or A. spinalis posterior; larger Aa. segmentales medullares continue on to supply a segment of these arteries.

Arteries of Spinal Cord: Intrinsic Distribution

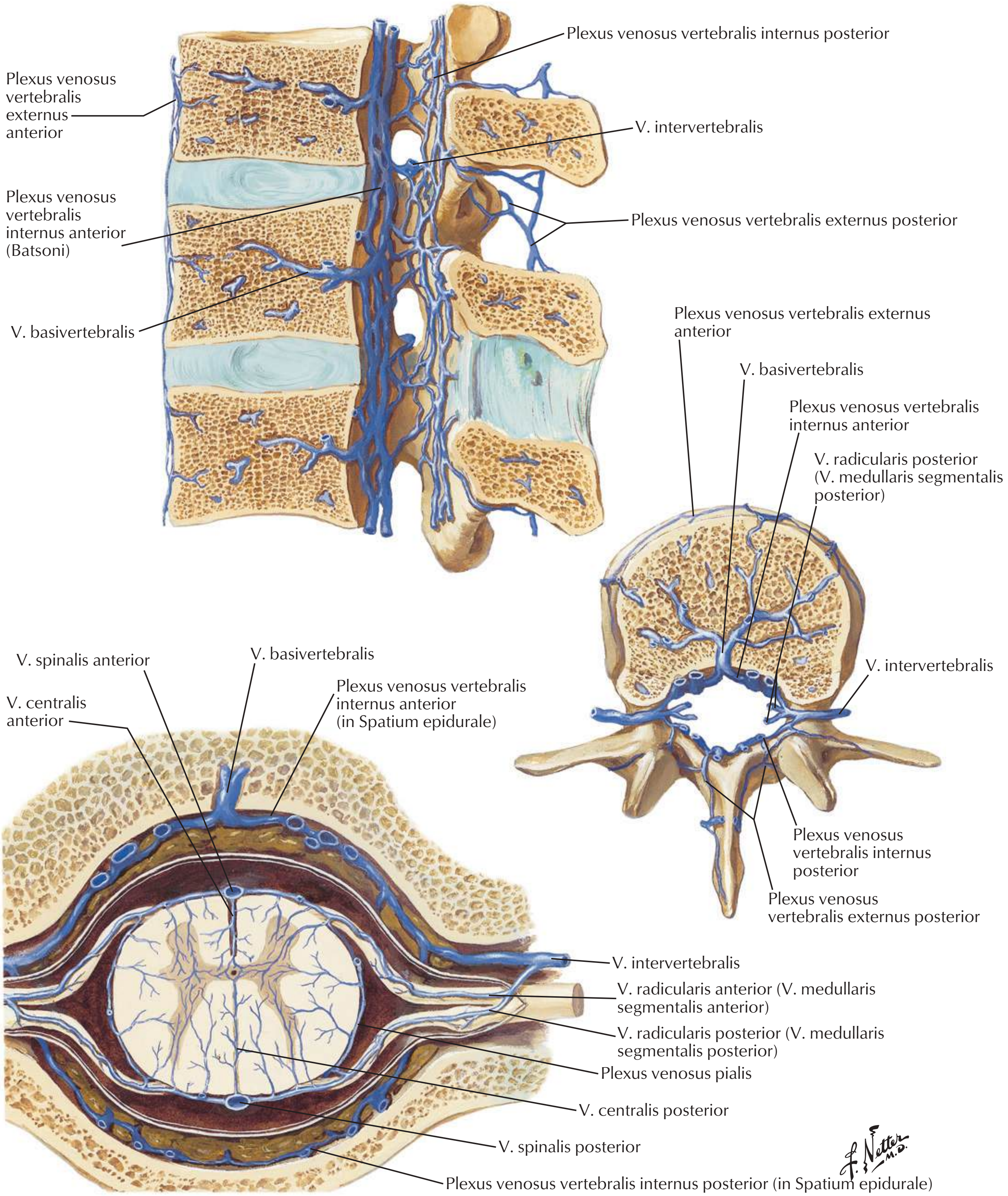

Aa. spinales posteriores
A. spinalis anterior
A. medullaris segmentalis
A. radicularis anterior
A. radicularis posterior
Branch to Corpus vertebrae and Dura mater spinalis
R. spinalis
R. dorsalis a. intercostalis posterioris
A. intercostalis posterior
Vasa anastomotica paravertebralia
Vasa anastomotica prevertebralia
Aorta thoracica (Aorta descendens)
F. Netter M.D.

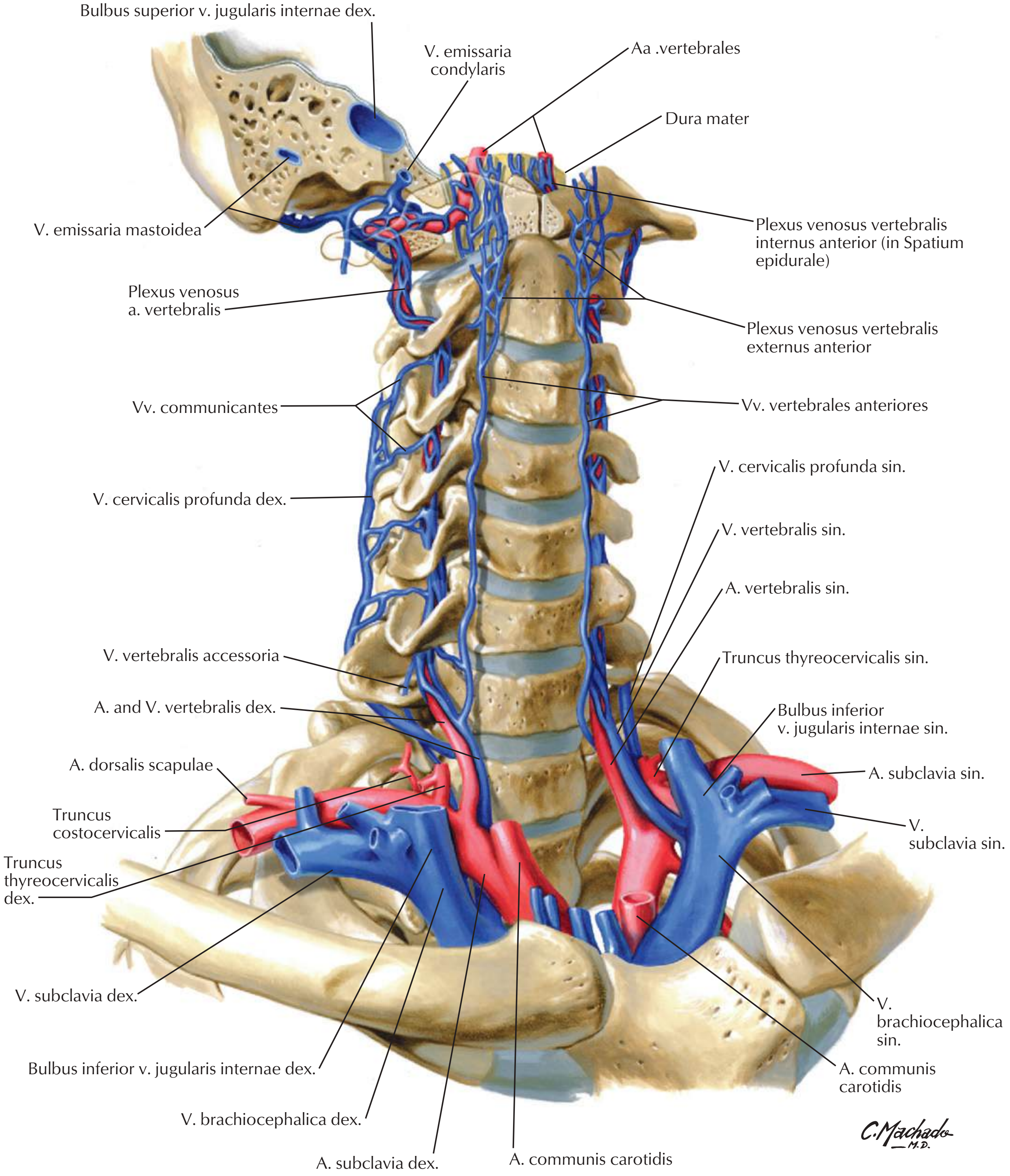
Section through thoracic level: anterosuperior view


Sulcal (central) branches to right side of medulla spinalis
A. radicularis posterior
A. medullaris segmentalis
Plexus vasculosus pialis
Aa. radiculares posterior and anterior
A. spinalis anterior
A. spinalis posterior dex.
Peripheral branches from Plexus vasculosus pialis
Sulcal (central) branches to left side of medulla spinalis
A. spinalis posterior sin.
A. radicularis posterior
A. medullaris segmentalis
Plexus vasculosus pialis

Arterial distribution: schema

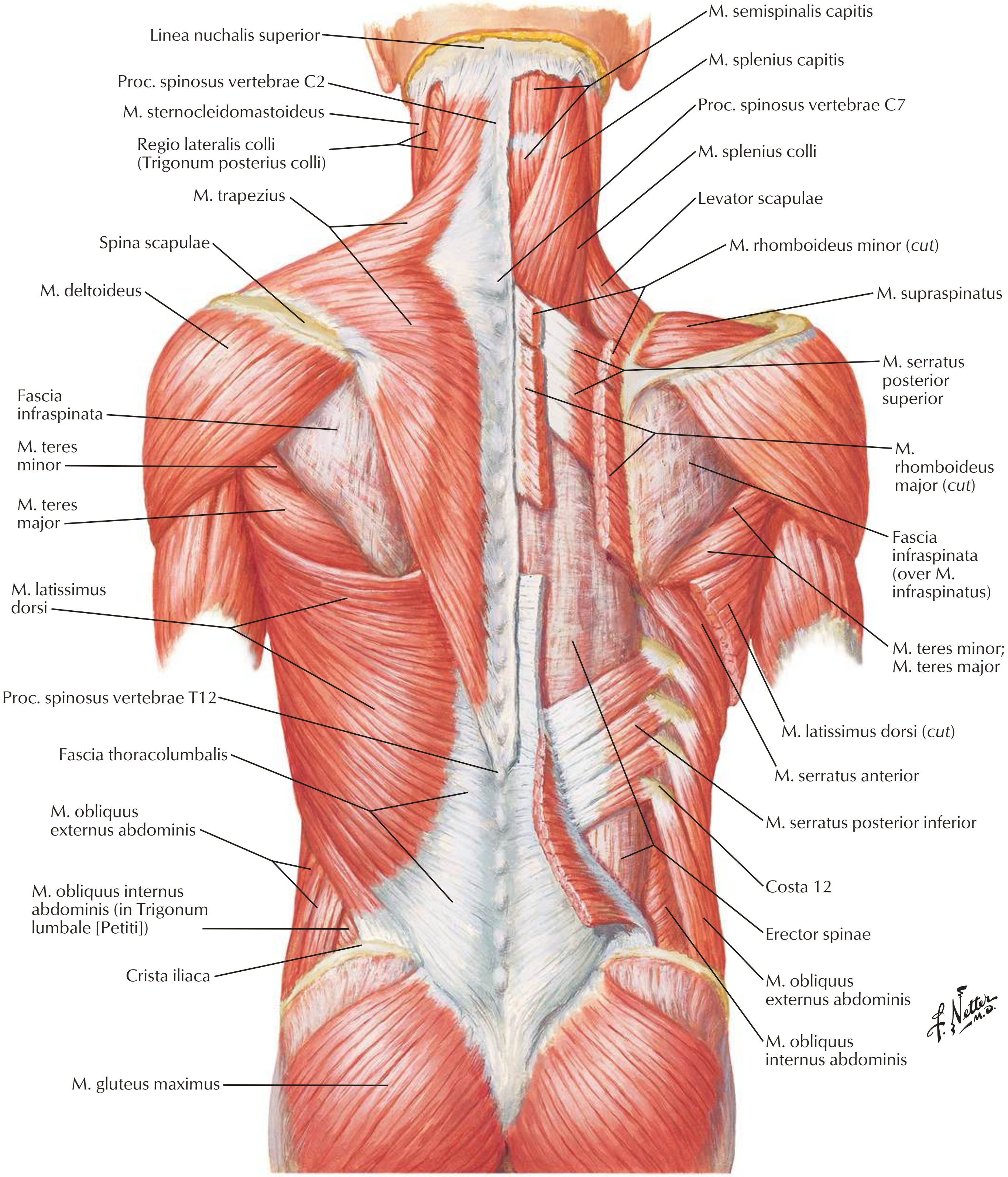
Veins of Spinal Cord and Vertebral Column

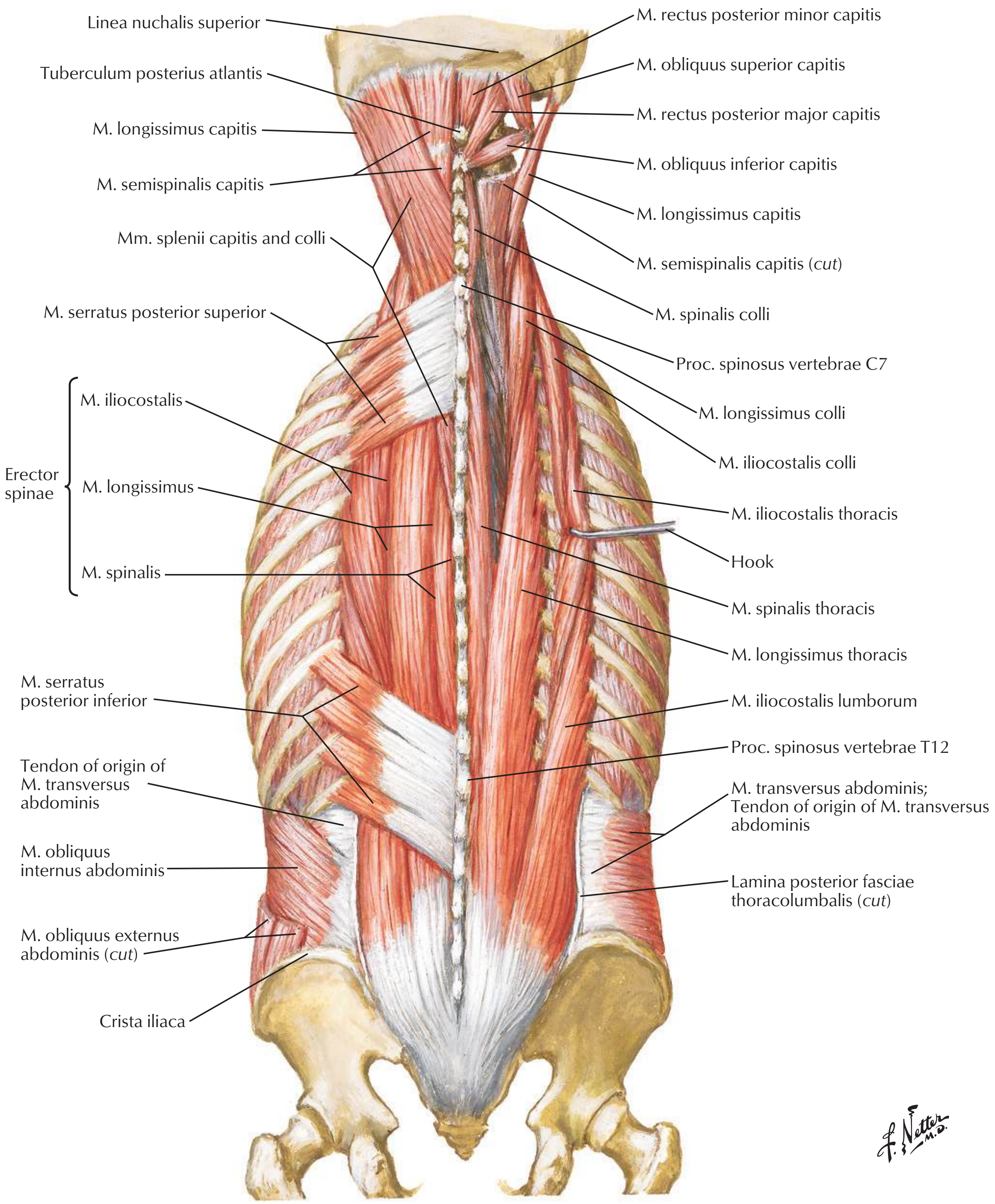

Plexus venosus vertebralis externus anterior
Plexus venosus vertebralis internus anterior (Batsoni)
V. basivertebralis
Plexus venosus vertebralis internus posterior
V. intervertebralis
Plexus venosus vertebralis externus posterior
Plexus venosus vertebralis externus anterior
V. basivertebralis
Plexus venosus vertebralis internus anterior
V. radicularis posterior (V. medullaris segmentalis posterior)
V. intervertebralis
Plexus venosus vertebralis internus posterior
Plexus venosus vertebralis externus posterior
V. spinalis anterior
V. centralis anterior
V. basivertebralis
Plexus venosus vertebralis internus anterior (in Spatium epidurale)
V. intervertebralis
V. radicularis anterior (V. medullaris segmentalis anterior)
V. radicularis posterior (V. medullaris segmentalis posterior)
Plexus venosus pialis
V. centralis posterior
V. spinalis posterior
Plexus venosus vertebralis internus posterior (in Spatium epidurale)
F. Netter M.D.

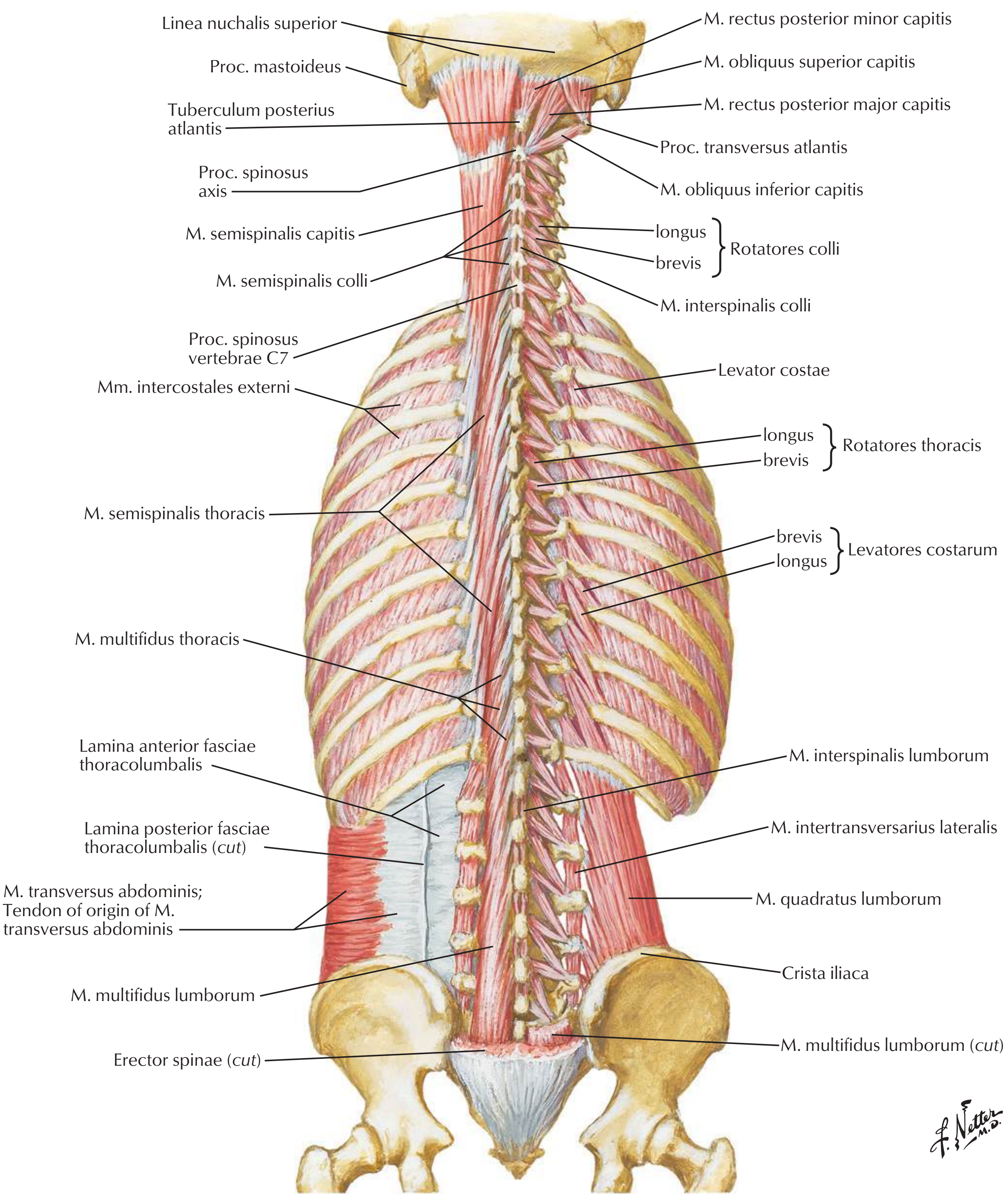

Bulbus superior v. jugularis internae dex.
V. emissaria condylaris
Aa .vertebrales
Dura mater
V. emissaria mastoidea
Plexus venosus vertebralis internus anterior (in Spatium epidurale)
Plexus venosus a. vertebralis
Plexus venosus vertebralis externus anterior
Vv. communicantes
Vv. vertebrales anteriores
V. cervicalis profunda sin.
V. cervicalis profunda dex.
V. vertebralis sin.
A. vertebralis sin.
V. vertebralis accessoria
Truncus thyreocervicalis sin.
A. and V. vertebralis dex.
Bulbus inferior v. jugularis internae sin.
A. dorsalis scapulae
A. subclavia sin.
Truncus costocervicalis
V. subclavia sin.
Truncus thyreocervicalis dex.
V. subclavia dex.
V. brachiocephalica sin.
Bulbus inferior v. jugularis internae dex.
A. communis carotidis
V. brachiocephalica dex.
A. subclavia dex.
A. communis carotidis
C. Machado M.D.

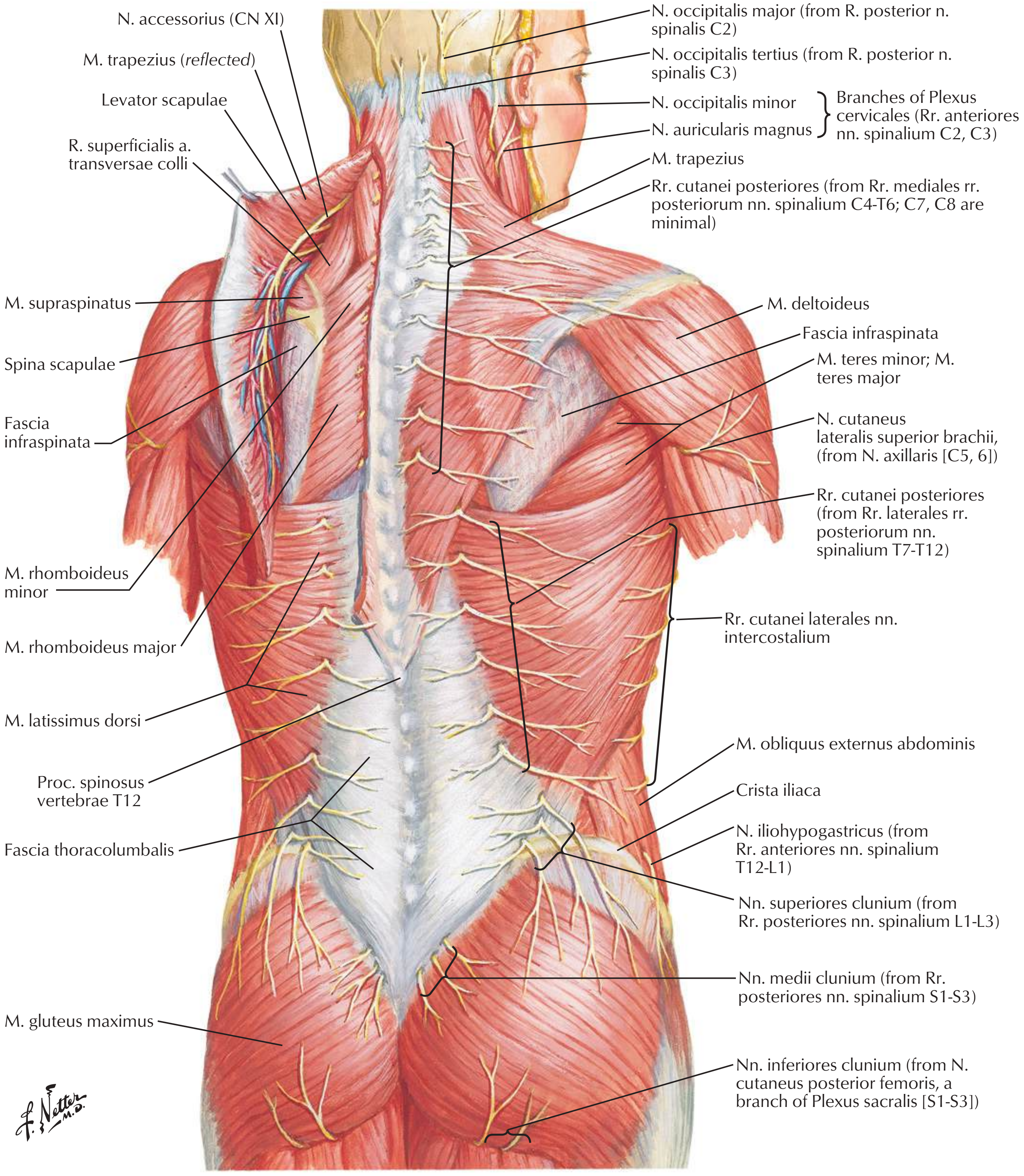
Muscles of Back: Superficial Layer

See also Plates 36, 257


Linea nuchalis superior
Proc. spinosus vertebrae C2
M. sternocleidomastoideus
Regio lateralis colli (Trigonum posterius colli)
M. trapezius
Spina scapulae
M. deltoideus
Fascia infraspinata
M. teres minor
M. teres major
M. latissimus dorsi
Proc. spinosus vertebrae T12
Fascia thoracolumbalis
M. obliquus externus abdominis
M. obliquus internus abdominis (in Trigonum lumbale [Petiti])
Crista iliaca
M. gluteus maximus
M. semispinalis capitis
M. splenius capitis
Proc. spinosus vertebrae C7
M. splenius colli
Levator scapulae
M. rhomboideus minor (*cut*)
M. supraspinatus
M. serratus posterior superior
M. rhomboideus major (*cut*)
Fascia infraspinata (over M. infraspinatus)
M. teres minor; M. teres major
M. latissimus dorsi (*cut*)
M. serratus anterior
M. serratus posterior inferior
Costa 12
Erector spinae
M. obliquus externus abdominis
M. obliquus internus abdominis

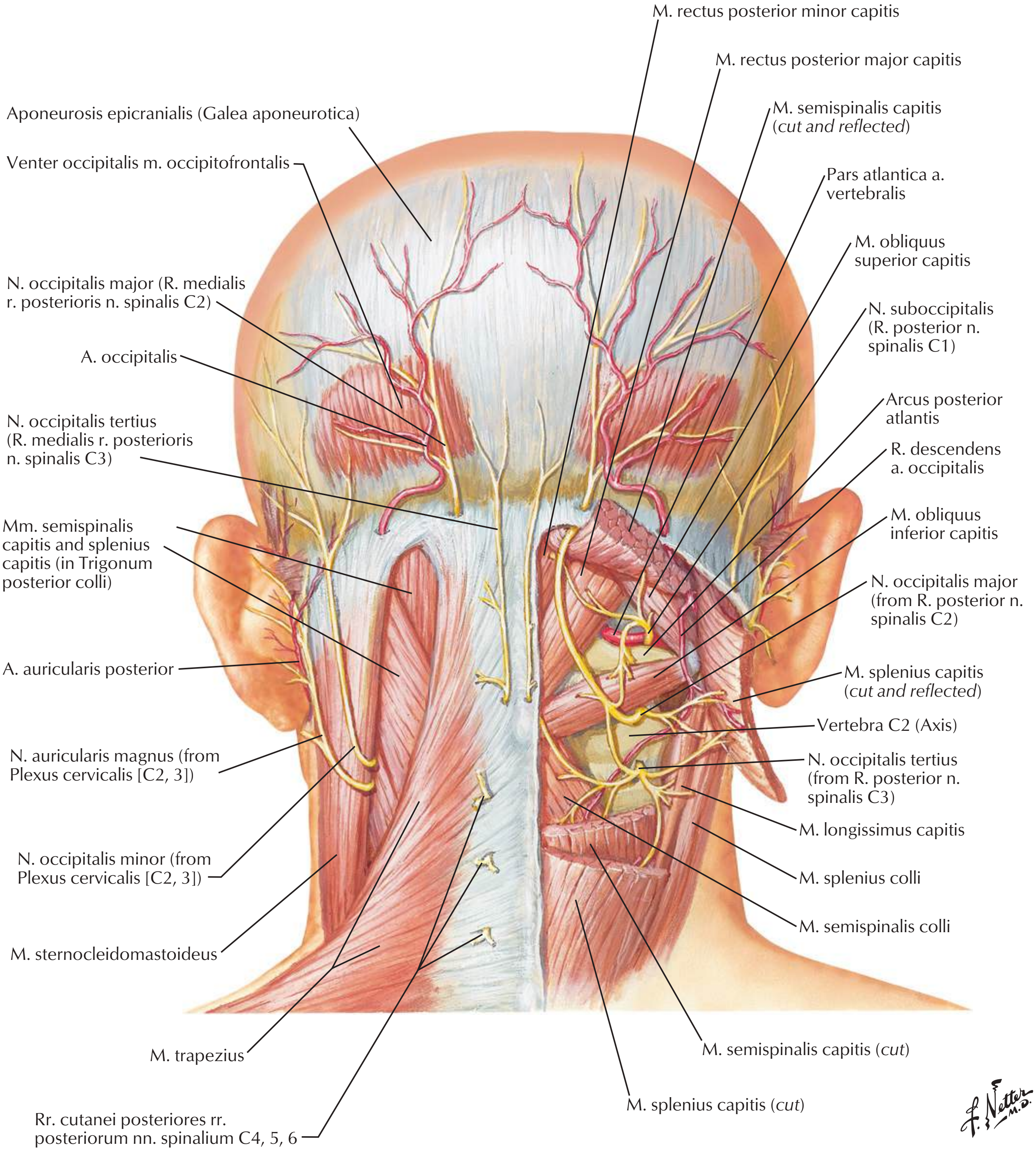

Linea nuchalis superior
Tuberculum posterius atlantis
M. longissimus capitis
M. semispinalis capitis
Mm. splenii capitis and colli
M. serratus posterior superior
Erector spinae
M. iliocostalis
M. longissimus
M. spinalis
M. serratus posterior inferior
Tendon of origin of M. transversus abdominis
M. obliquus internus abdominis
M. obliquus externus abdominis (*cut*)
Crista iliaca
M. rectus posterior minor capitis
M. obliquus superior capitis
M. rectus posterior major capitis
M. obliquus inferior capitis
M. longissimus capitis
M. semispinalis capitis (*cut*)
M. spinalis colli
Proc. spinosus vertebrae C7
M. longissimus colli
M. iliocostalis colli
M. iliocostalis thoracis
Hook
M. spinalis thoracis
M. longissimus thoracis
M. iliocostalis lumborum
Proc. spinosus vertebrae T12
M. transversus abdominis; Tendon of origin of M. transversus abdominis
Lamina posterior fasciae thoracolumbalis (*cut*)
F. Netter M.D.


Linea nuchalis superior
Proc. mastoideus
Tuberculum posterius atlantis
Proc. spinosus axis
M. semispinalis capitis
M. semispinalis colli
Proc. spinosus vertebrae C7
Mm. intercostales externi
M. semispinalis thoracis
M. multifidus thoracis
Lamina anterior fasciae thoracolumbalis
Lamina posterior fasciae thoracolumbalis (*cut*)
M. transversus abdominis; Tendon of origin of M. transversus abdominis
M. multifidus lumborum
Erector spinae (*cut*)
M. rectus posterior minor capitis
M. obliquus superior capitis
M. rectus posterior major capitis
Proc. transversus atlantis
M. obliquus inferior capitis
longus
brevis
Rotatores colli
M. interspinalis colli
Levator costae
longus
brevis
Rotatores thoracis
brevis
longus
Levatores costarum
M. interspinalis lumborum
M. intertransversarius lateralis
M. quadratus lumborum
Crista iliaca
M. multifidus lumborum (*cut*)

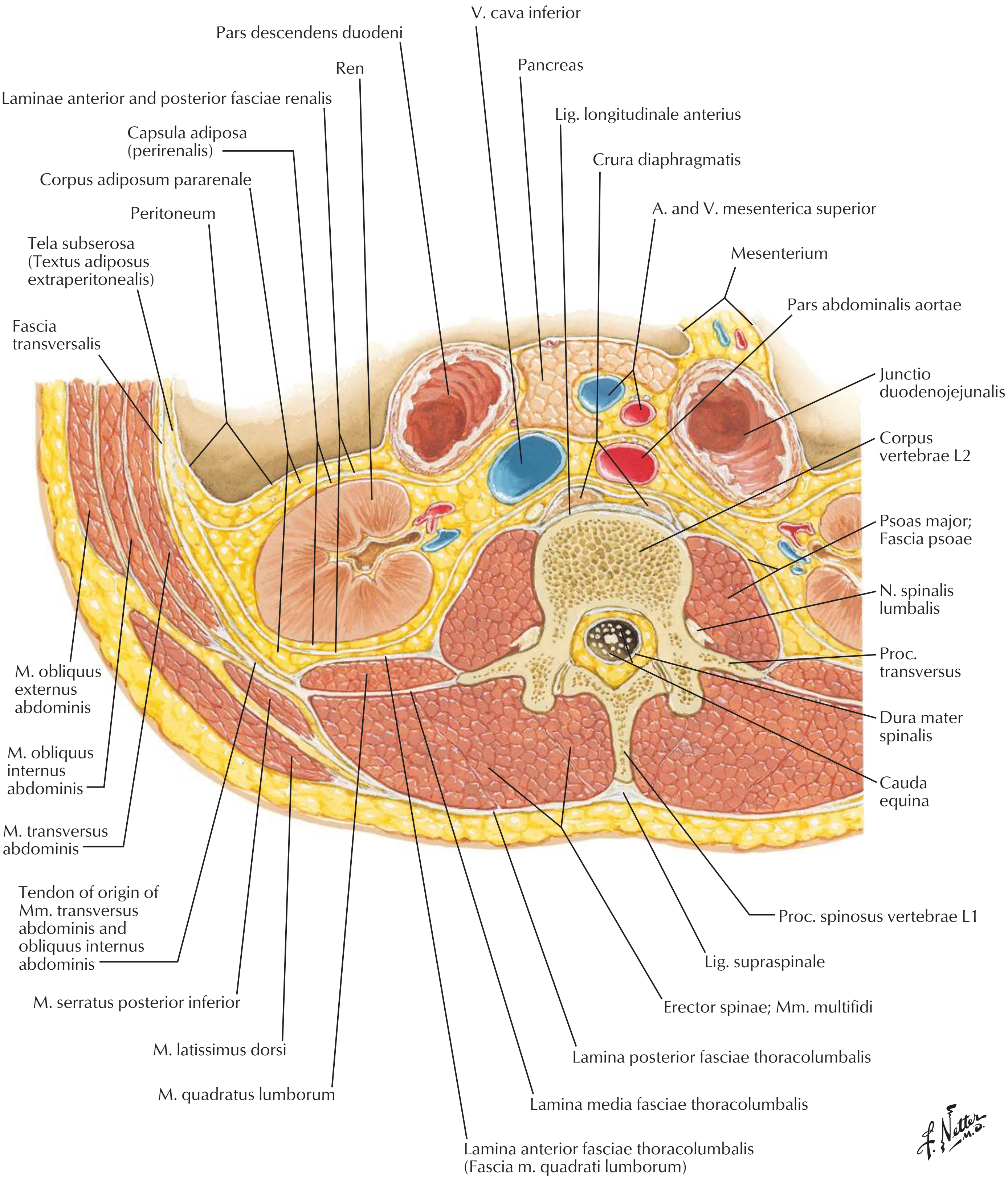

N. accessorius (CN XI)
M. trapezius (*reflected*)
Levator scapulae
R. superficialis a. transversae colli
M. supraspinatus
Spina scapulae
Fascia infraspinata
M. rhomboideus minor
M. rhomboideus major
M. latissimus dorsi
Proc. spinosus vertebrae T12
Fascia thoracolumbalis
M. gluteus maximus
N. occipitalis major (from R. posterior n. spinalis C2)
N. occipitalis tertius (from R. posterior n. spinalis C3)
N. occipitalis minor
N. auricularis magnus
Branches of Plexus cervicales (Rr. anteriores nn. spinalium C2, C3)
M. trapezius
Rr. cutanei posteriores (from Rr. mediales rr. posteriorum nn. spinalium C4-T6; C7, C8 are minimal)
M. deltoideus
Fascia infraspinata
M. teres minor; M. teres major
N. cutaneus lateralis superior brachii, (from N. axillaris [C5, 6])
Rr. cutanei posteriores (from Rr. laterales rr. posteriorum nn. spinalium T7-T12)
Rr. cutanei laterales nn. intercostalium
M. obliquus externus abdominis
Crista iliaca
N. iliohypogastricus (from Rr. anteriores nn. spinalium T12-L1)
Nn. superiores clunium (from Rr. posteriores nn. spinalium L1-L3)
Nn. medii clunium (from Rr. posteriores nn. spinalium S1-S3)
Nn. inferiores clunium (from N. cutaneus posterior femoris, a branch of Plexus sacralis [S1-S3])
F. Netter M.D.

Suboccipital Triangle

See also **Plates 36, 39**

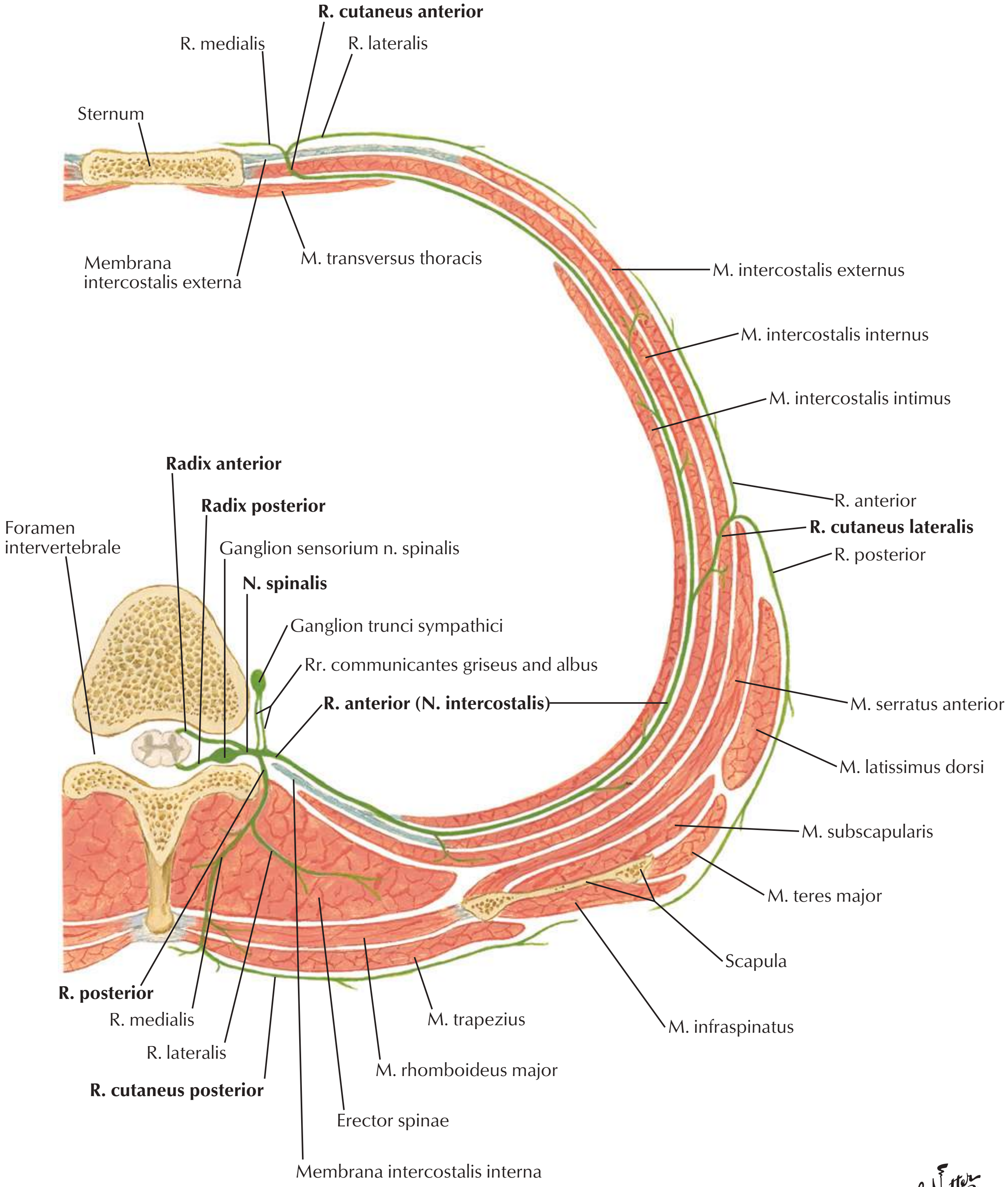

M. rectus posterior minor capitis
M. rectus posterior major capitis
Aponeurosis epicranialis (Galea aponeurotica)
M. semispinalis capitis (*cut and reflected*)
Venter occipitalis m. occipitofrontalis
Pars atlantica a. vertebralis
M. obliquus superior capitis
N. occipitalis major (R. medialis r. posterioris n. spinalis C2)
N. suboccipitalis (R. posterior n. spinalis C1)
A. occipitalis
Arcus posterior atlantis
N. occipitalis tertius (R. medialis r. posterioris n. spinalis C3)
R. descendens a. occipitalis
Mm. semispinalis capitis and splenius capitis (in Trigonum posterior colli)
M. obliquus inferior capitis
N. occipitalis major (from R. posterior n. spinalis C2)
A. auricularis posterior
M. splenius capitis (*cut and reflected*)
Vertebra C2 (Axis)
N. auricularis magnus (from Plexus cervicalis [C2, 3])
N. occipitalis tertius (from R. posterior n. spinalis C3)
M. longissimus capitis
N. occipitalis minor (from Plexus cervicalis [C2, 3])
M. splenius colli
M. semispinalis colli
M. sternocleidomastoideus
M. semispinalis capitis (*cut*)
M. trapezius
M. splenius capitis (*cut*)
Rr. cutanei posteriores rr. posteriorum nn. spinalium C4, 5, 6

See also Plates 312, 318


V. cava inferior
Pars descendens duodeni
Pancreas
Ren
Laminae anterior and posterior fasciae renalis
Lig. longitudinale anterius
Capsula adiposa (perirenalis)
Crura diaphragmatis
Corpus adiposum pararenale
A. and V. mesenterica superior
Peritoneum
Tela subserosa (Textus adiposus extraperitonealis)
Mesenterium
Pars abdominalis aortae
Fascia transversalis
Junctio duodenojejunalis
Corpus vertebrae L2
Psoas major; Fascia psoae
N. spinalis lumbalis
Proc. transversus
M. obliquus externus abdominis
Dura mater spinalis
M. obliquus internus abdominis
Cauda equina
M. transversus abdominis
Tendon of origin of Mm. transversus abdominis and obliquus internus abdominis
Proc. spinosus vertebrae L1
Lig. supraspinale
M. serratus posterior inferior
Erector spinae; Mm. multifidi
M. latissimus dorsi
Lamina posterior fasciae thoracolumbalis
M. quadratus lumborum
Lamina media fasciae thoracolumbalis
Lamina anterior fasciae thoracolumbalis (Fascia m. quadrati lumborum)
F. Netter M.D.

Typical Thoracic Spinal Nerve: Cross Section

See also Plate 261



R. cutaneus anterior
R. medialis
R. lateralis
Sternum
Membrana intercostalis externa
M. transversus thoracis
M. intercostalis externus
M. intercostalis internus
M. intercostalis intimus
R. anterior
R. cutaneus lateralis
R. posterior
Radix anterior
Radix posterior
Foramen intervertebrale
Ganglion sensorium n. spinalis
N. spinalis
Ganglion trunci sympathici
Rr. communicantes griseus and albus
R. anterior (N. intercostalis)
M. serratus anterior
M. latissimus dorsi
M. subscapularis
M. teres major
Scapula
M. infraspinatus
R. posterior
R. medialis
R. lateralis
R. cutaneus posterior
M. trapezius
M. rhomboideus major
Erector spinae
Membrana intercostalis interna

Note: *In lower thoracic region, R. lateralis of R. posterior is longer, and motor and cutaneous; R. medialis is shorter and motor only.*

ANATOMIC STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA SKELETALE		
Processus spinosi	Palpable landmarks used to assess curvaturae columnae vertebralis and determine location of medulla spinalis for procedures such as lumbar puncture and injection of spinal anesthesia	161, 180
Processus spinosus vertebrae prominentis (C7)	Most prominent processus spinosus (vertebra prominens); often used to begin counting vertebrae	161, 163
Discus intervertebralis	Age-related changes may produce herniation of nucleus pulposus, causing back pain; occurs most commonly in lower lumbar regions of columna vertebralis	164, 170
Lamina arcus vertebrae	Surgically removed in laminectomy to gain access to canalis vertebralis and medulla spinalis	164
Foramen intervertebrale	May become narrowed by age-related changes (e.g., osteophyte formation) or changes in height of discus intervertebralis, producing compression of its contents	164, 167, 168
Hiatus sacralis	Provides access to spatium epidurale to administer caudal epidural anesthesia	166
Vertebra lumbalis V (L5)	Spondylolysis is clinical condition in which corpus vertebrae separates from the part of the arcus vertebrae bearing processus articularis inferior; if this occurs bilaterally, corpus and processus transversus of vertebra L5 may slide forward over os sacrum, giving rise to spondylolisthesis	167
Vertebrae L5/S1	Most common level of herniation of discus intervertebralis	167, 170
Foramen vertebrale	May become narrowed by arthritic changes in vertebrae lumbales, resulting in spinal stenosis; can lead to back pain, sciatica, numbness or tingling, and weakness in lower limbs	163, 164
SYSTEMA MUSCULARE		
M. trapezius	Responsible for holding scapula against thoracic wall against gravity; drooping of shoulder indicates weakness of or injury to N. accessorius	180
Mm. dorsi proprii	Microscopic stretching or tearing of muscle fibers produces back strain, a common cause of low back pain	181, 182
SYSTEMA NERVOSUM		
Conus medullaris	Indicates inferior limit of medulla spinalis; it is necessary to locate this point in procedures such as lumbar puncture	169
Cauda equina	Radices nervorum lumbalium and sacralium may be anesthetized with anesthesia injected into spatium subarachnoideum (spinal block)	169, 170
Meninges spinales	Access to spatia epidurale and subarachnoideum is necessary for clinical procedures such as epidural anesthesia and lumbar puncture	165, 175
SYSTEMA CARDIOVASCULARE		
Aa. medullares segmentales	Narrowing or damage to these arteries, caused by atherosclerosis, fractures of vertebrae, or dislocations of vertebrae, may cause ischemia of medulla spinalis	176
Plexus venosi columnae vertebralis	Venous conduits for metastasis of cancer cells to spine, lungs, and brain	178

*Selections were based largely on clinical data as well as commonly covered clinical correlations in gross anatomy courses.

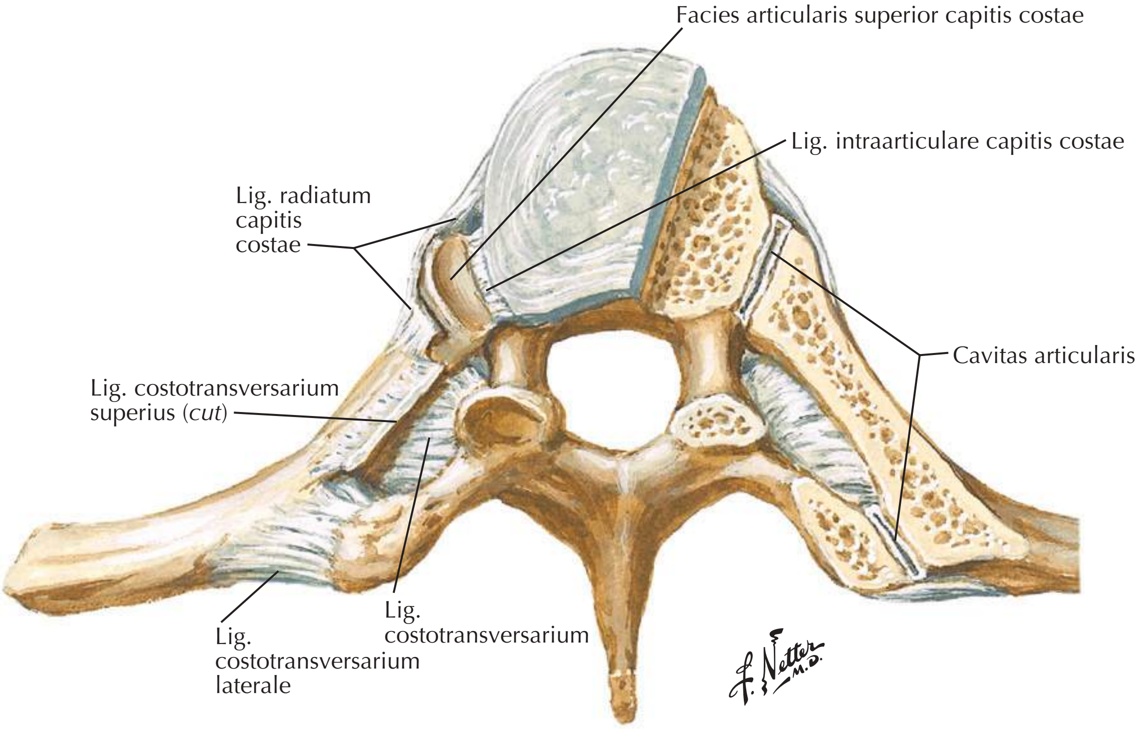
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Erector spinae	Mm. sacrospinales	Facies dorsalis ossis sacri; Crista iliaca; Ligg. sacrospinale and supraspinale; Procc. spinosi vertebrarum lumbalium inferiorum and ossis sacri	*M. iliocostalis:* Anguli costarum inferiorum; Procc. transversi vertebrarum cervicalium *M. longissimus:* Costae, between tubercula costarum and anguli costarum; Procc. transversi vertebrarum thoracicarum and cervicalium; Proc. mastoideus *M. spinalis:* Procc. spinosi vertebrarum thoracicarum superiorum and cervicalium mediarum	Rr. posteriores nn. spinalium of each region	*Partes cervicales:* Aa. occipitalis, cervicalis profunda, and vertebralis *Partes thoracicae:* Rr. dorsales aa. intercostalium posteriorum, subcostalis, and lumbalium *Partes sacrales:* Rr. dorsales aa. sacralium lateralium	Extends and laterally bends vertebral column and head
Mm. interspinales (colli, thoracis, lumborum)	Mm. segmentales dorsi proprii	Procc. spinosi vertebrarum	Adjacent procc. spinosi vertebrarum	Rr. posteriores nn. spinalium	*Partes cervicales:* Aa. occipitalis, cervicalis profunda, and vertebralis *Partes thoracicae:* Rr. dorsales aa. intercostalium posteriorum *Partes lumbales:* Rr. dorsales aa. lumbalium	Aid in extension of vertebral column
Mm. intertransversarii (colli, thoracis, lumborum)	Mm. segmentales dorsi proprii	Procc. transversi vertebrarum	Adjacent procc. transversi vertebrarum	Rr. posteriores nn. spinalium	*Partes cervicales:* Aa. occipitalis, cervicalis profunda, and vertebralis *Partes thoracicae:* Rr. dorsales aa. intercostalium posteriorum, subcostalis, and lumbalium *Partes lumbales:* Rr. dorsales aa. lumbalium	Assist in lateral flexion of vertebral column
M. latissimus dorsi	Mm. superficiales dorsi	Procc. spinosi vertebrarum T7–L5; Fascia thoracolumbalis; Crista iliaca; Costae 10-12	Humerus (Sulcus intertubercularis)	N. thoracodorsalis	A. thoracodorsalis; Rr. dorsales perforantes aa. intercostalium posteriorum (9-11), subcostalis, and lumbalium (1-3)	Extends, adducts, and medially rotates humerus
Levator scapulae	Mm. superficiales dorsi	Tubercula posteriora [procc. transversorum] vertebrarum C1–C4	Margo medialis scapulae from angulus superior to spina scapulae	Rr. anteriores nn. spinalium C3–C4; N. dorsalis scapulae	Aa. dorsalis scapulae, transversa colli, and cervicalis ascendens	Elevates scapula medially, inferiorly rotates glenoid fossa

Variations in spinal nerve contributions to the innervation of muscles, their arterial supply, their attachments, and their actions are common themes in human anatomy. Therefore, expect differences between texts and realize that anatomical variation is normal.

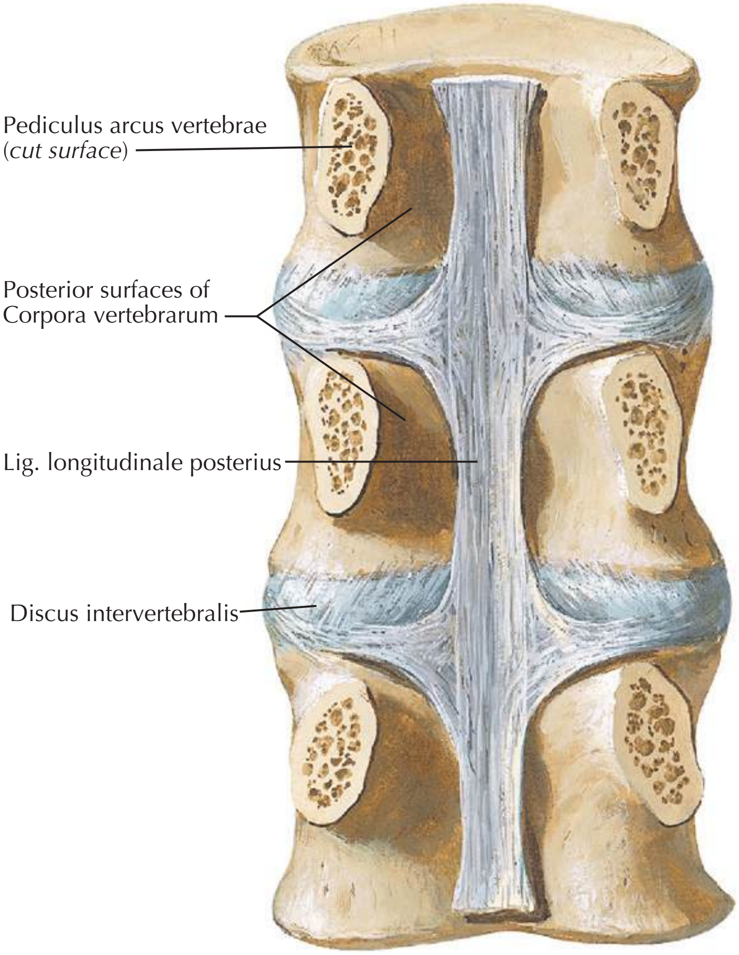
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Mm. multifidi	Mm. transversospinales	Os sacrum; Os ilium; Procc. transversi vertebrarum T1–T12; Procc. articulares vertebrarum C4–C7	Procc. spinosi vertebrarum above, spanning two to four segments	Rr. posteriores nn. spinalium of each region	*Partes cervicales:* Aa. occipitalis, cervicalis profunda, and vertebralis *Partes thoracicae:* Rami dorsales aa. intercostalium posteriorum, subcostalis, and lumbalium *Partes sacrales:* Rami dorsales aa. sacralium lateralium	Stabilizes vertebral column
M. obliquus inferior capitis	Mm. suboccipitales	Proc. spinosus axis	Proc. transversus atlantis	N. suboccipitalis	A. vertebralis; R. descendens a. occipitalis	Rotates atlas to turn face to same side
M. obliquus superior capitis	Mm. suboccipitales	Proc. transversus atlantis	Os occipitale	N. suboccipitalis	A. vertebralis; R. descendens a. occipitalis	Extends and bends head laterally
M. rectus posterior major capitis	Mm. suboccipitales	Proc. spinosus axis	Linea nuchalis inferior	N. suboccipitalis	A. vertebralis; R. descendens a. occipitalis	Extends and rotates head to same side
M. rectus posterior minor capitis	Mm. suboccipitales	Tuberculum posterius atlantis	Median third of linea nuchalis inferior	N. suboccipitalis	A. vertebralis; R. descendens a. occipitalis	Extends head
M. rhomboideus major	Mm. superficiales dorsi	Procc. spinosi vertebrarum T2–T5	Margo medialis scapulae below base of spina scapulae	N. dorsalis scapulae	A. dorsalis scapulae (OR R. profundus a. transversae colli); Rr. dorsales perforantes aa. intercostalium posteriorum (1-5 or 6)	Fixes scapula to thoracic wall and retracts and rotates it to depress glenoid cavity
M. rhomboideus minor	Mm. superficiales dorsi	Lig. nuchae; Procc. spinosi vertebrarum C7 and T1	Margo medialis scapulae at spina scapulae	N. dorsalis scapulae	A. dorsalis scapulae (OR R. profundus a. transversae colli); Rr. dorsales perforantes aa. intercostalium posteriorum (1-5 or 6)	Fixes scapula to thoracic wall and retracts and rotates it to depress glenoid cavity
Rotatores	Mm. transversospinales	Procc. transversi vertebrarum cervicalium, thoracicarum, and lumbalium	Laminae vertebrarum and procc. transversi vertebrarum above, spanning one or two segments	Rr. posteriores nn. spinalium	Rr. dorsales aa. segmentales	Stabilizes, extends, and rotates vertebral column
M. semispinalis	Mm. transversospinales	Procc. transversi vertebrarum C4–T12	Procc. spinosi vertebrarum cervicalium and thoracicarum	Rr. posteriores nn. spinalium	*Partes cervicales:* Aa. occipitalis, cervicalis profunda, and vertebralis *Partes thoracicae:* Rr. dorsales aa. intercostalium posteriorum	Extends head, neck, and thorax and rotates them to opposite side

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. serratus posterior inferior	Mm. intermedii dorsi	Procc. spinosi vertebrarum T11–L2	Margines inferiores costarum 9–12	Rr. anteriores nn. thoracicoruminferiorum	Aa. intercostales posteriores	Depresses ribs
M. serratus posterior superior	Mm. intermedii dorsi	Lig. nuchae; Procc. spinosi vertebrarum C7–T4	Margines superiores costarum 2–5	Rr. anteriores nn. thoracicorumsuperiorum	Aa. intercostales posteriores	Elevates ribs
M. splenius capitis	Mm. spinotransversales	Lig. nuchae; Procc. spinosi vertebrarum C7–T3	Proc. mastoideus ossis temporalis; Lateral third of linea nuchalis superior	Rr. posteriores nn. cervicalium mediorum	R. descendens a. occipitalis; A. cervicalis profunda	*Bilaterally:* extends head *Unilaterally*: laterally bends (flexes) and rotates face to same side
M. splenius colli	Mm. spinotransversales	Procc. spinosi vertebrarum T3–T6	Procc. transversi vertebrarum C1–C3	Rr. posteriores nn. cervicalium inferiorum	R. descendens a. occipitalis; A. cervicalis profunda	*Bilaterally*: extends neck *Unilaterally:* laterally bends (flexes) and rotates neck toward same side
M. trapezius	Mm. superficiales dorsi	Linea nuchalis superior; Protuberantia occipitalis externa; Lig. nuchae; Procc. spinosi vertebrarum C7–T12	Lateral third of clavicula; Acromion; Spina scapulae	N. accessorius (CN XI)	A. transversa colli; Rr. dorsales perforantes aa. intercostalium posteriorum	Elevates, retracts, and rotates scapula; lower fibers depress scapula

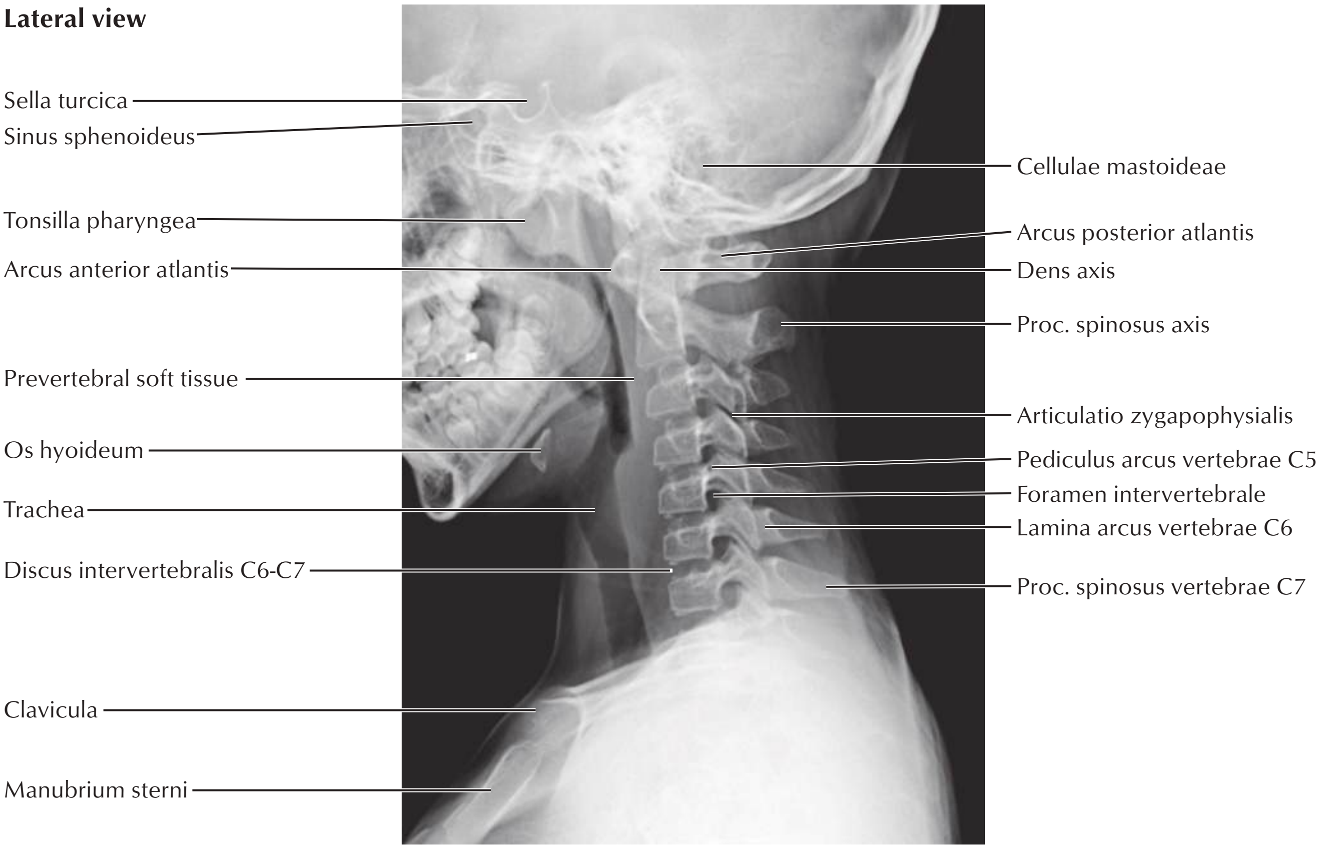
Thoracic vertebrae, transverse section: superior view


Facies articularis superior capitis costae
Lig. intraarticulare capitis costae
Lig. radiatum capitis costae
Cavitas articularis
Lig. costotransversarium superius (*cut*)
Lig. costotransversarium
Lig. costotransversarium laterale
F. Netter M.D.

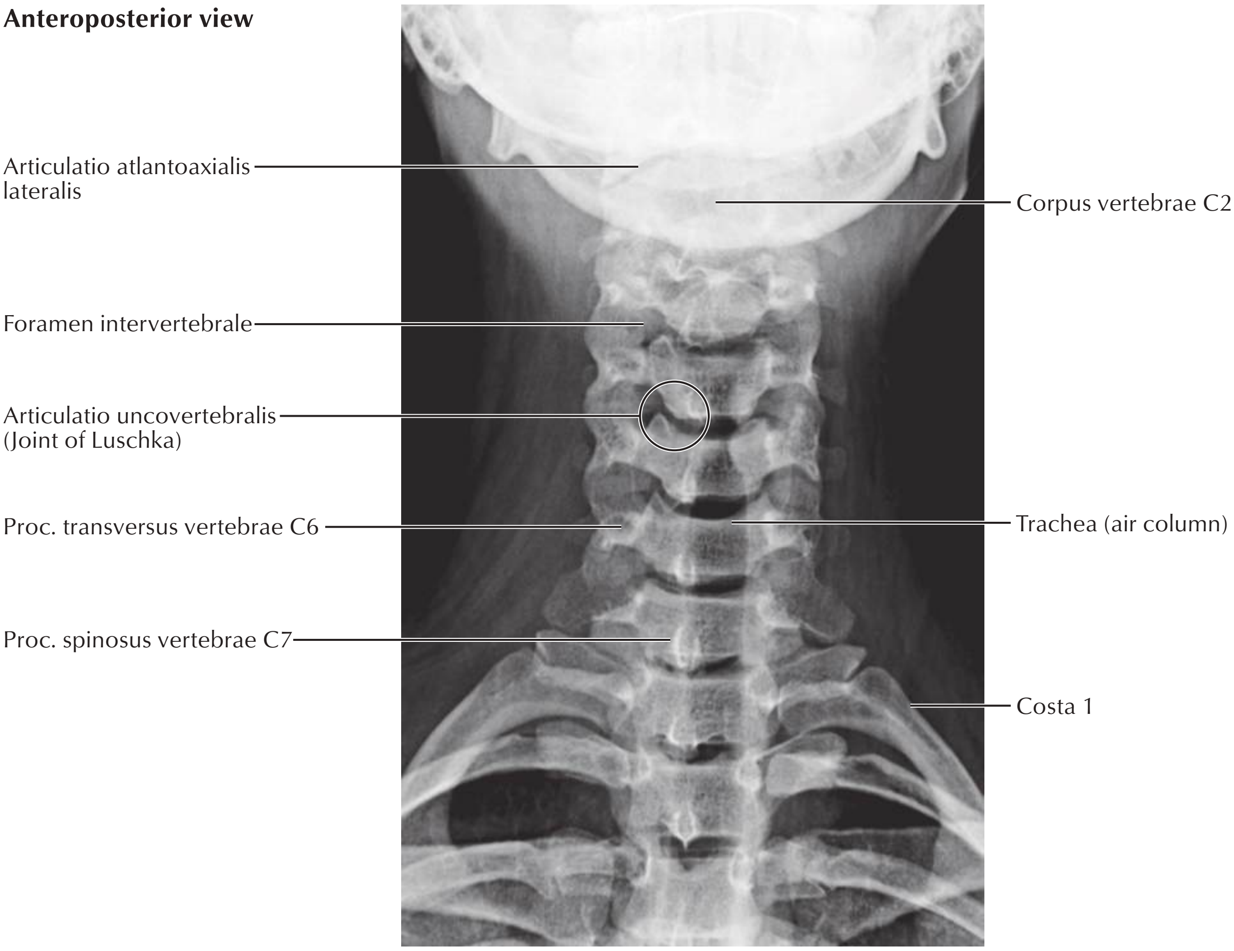
Lumbar anterior vertebral segments: posterior view (*pediculus arcus vertebrae sectioned*)


Pediculus arcus vertebrae (*cut surface*)
Posterior surfaces of Corpora vertebrarum
Lig. longitudinale posterius
Discus intervertebralis

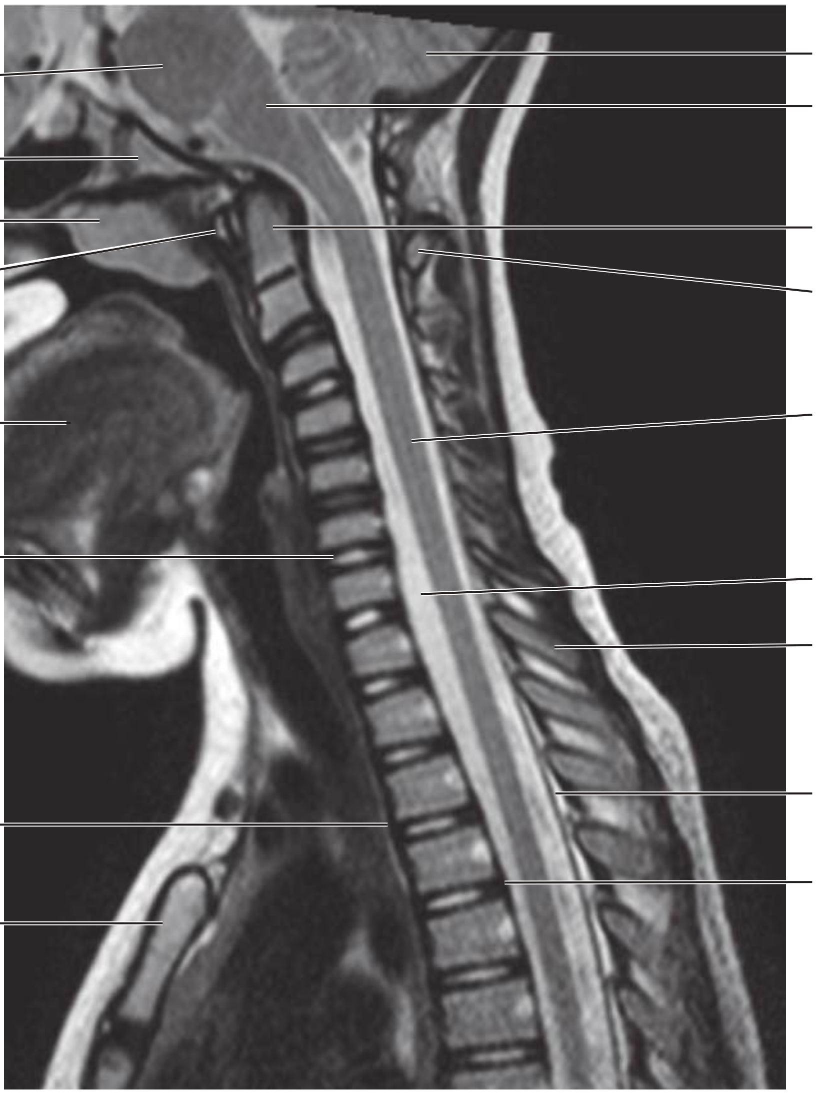
Lateral view


Sella turcica
Sinus sphenoideus
Tonsilla pharyngea
Arcus anterior atlantis
Prevertebral soft tissue
Os hyoideum
Trachea
Discus intervertebralis C6-C7
Clavicula
Manubrium sterni
Cellulae mastoideae
Arcus posterior atlantis
Dens axis
Proc. spinosus axis
Articulatio zygapophysialis
Pediculus arcus vertebrae C5
Foramen intervertebrale
Lamina arcus vertebrae C6
Proc. spinosus vertebrae C7

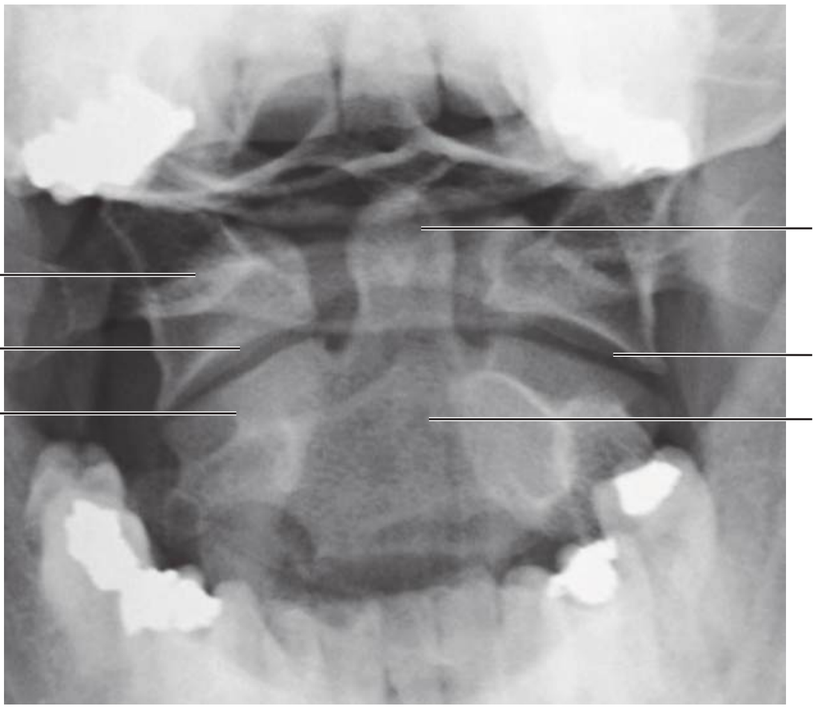
Anteroposterior view


Articulatio atlantoaxialis lateralis
Foramen intervertebrale
Articulatio uncovertebralis (Joint of Luschka)
Proc. transversus vertebrae C6
Proc. spinosus vertebrae C7
Corpus vertebrae C2
Trachea (air column)
Costa 1

Sagittal T2-weighted MRI of cervical spine, without contrast

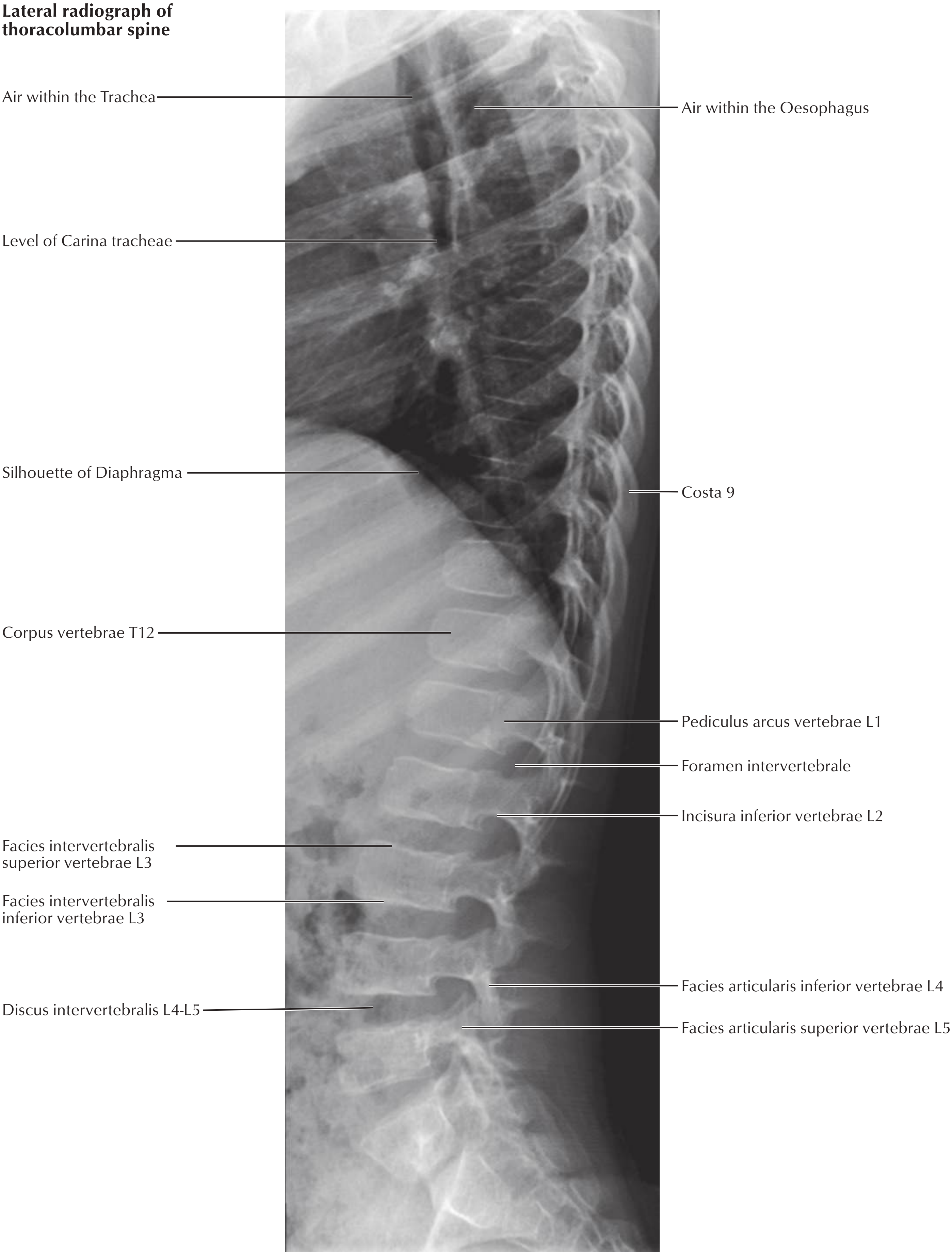

Pons
Clivus
Tonsilla pharyngea
Arcus anterior atlantis
Lingua
Discus intervertebralis C6-C7
Lig. longitudinale anterius
Manubrium sterni
Cerebellum
Medulla oblongata
Dens axis
Arcus posterior atlantis
Pars cervicalis medullae spinalis
Liquor cerebrospinalis within Spatium subarachnoideum
Proc. spinosus vertebrae C7
Dura mater spinalis
Lig. longitudinale posterius

Open-mouth radiograph of cervical spine


Facies articularis superior atlantis
Facies articularis inferior atlantis
Facies articularis superior axis
Dens axis
Articulatio atlantoaxialis lateralis
Corpus vertebrae C2 (Axis)

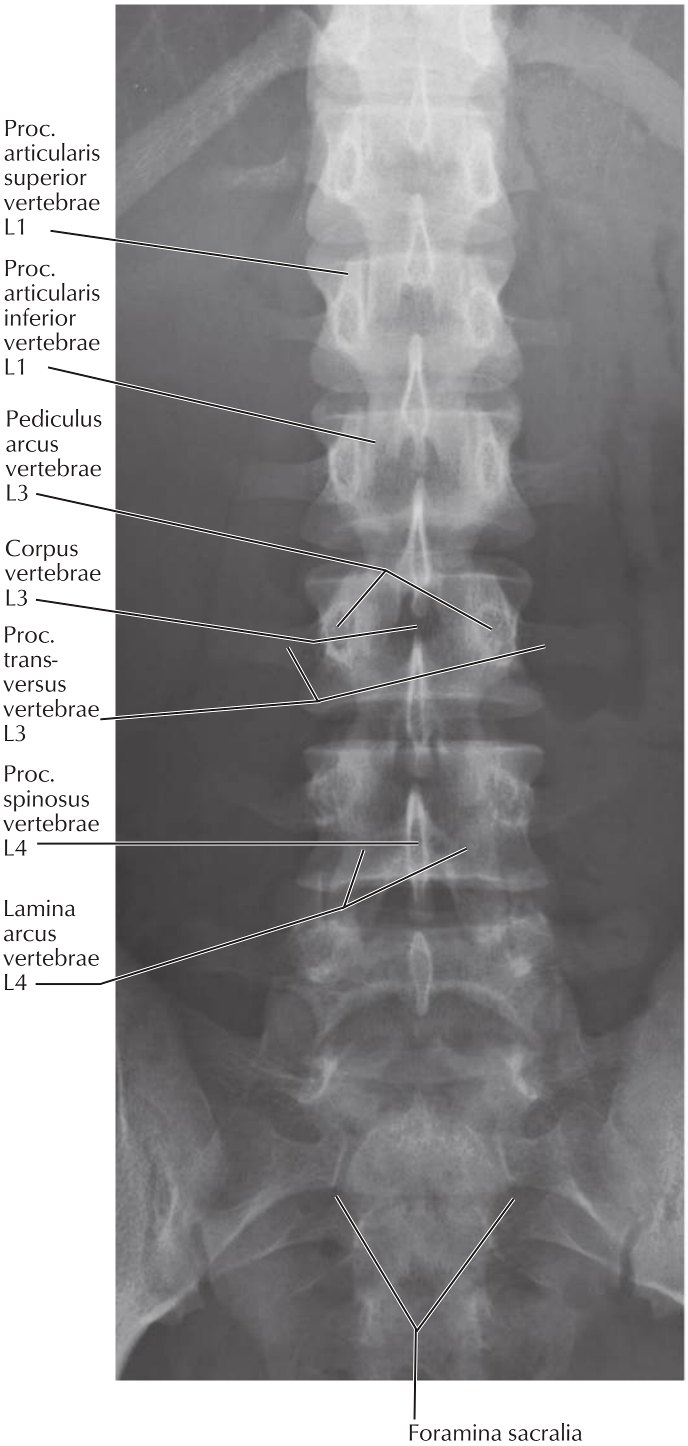
Thoracolumbar Spine: Lateral Radiograph

Lateral radiograph of thoracolumbar spine

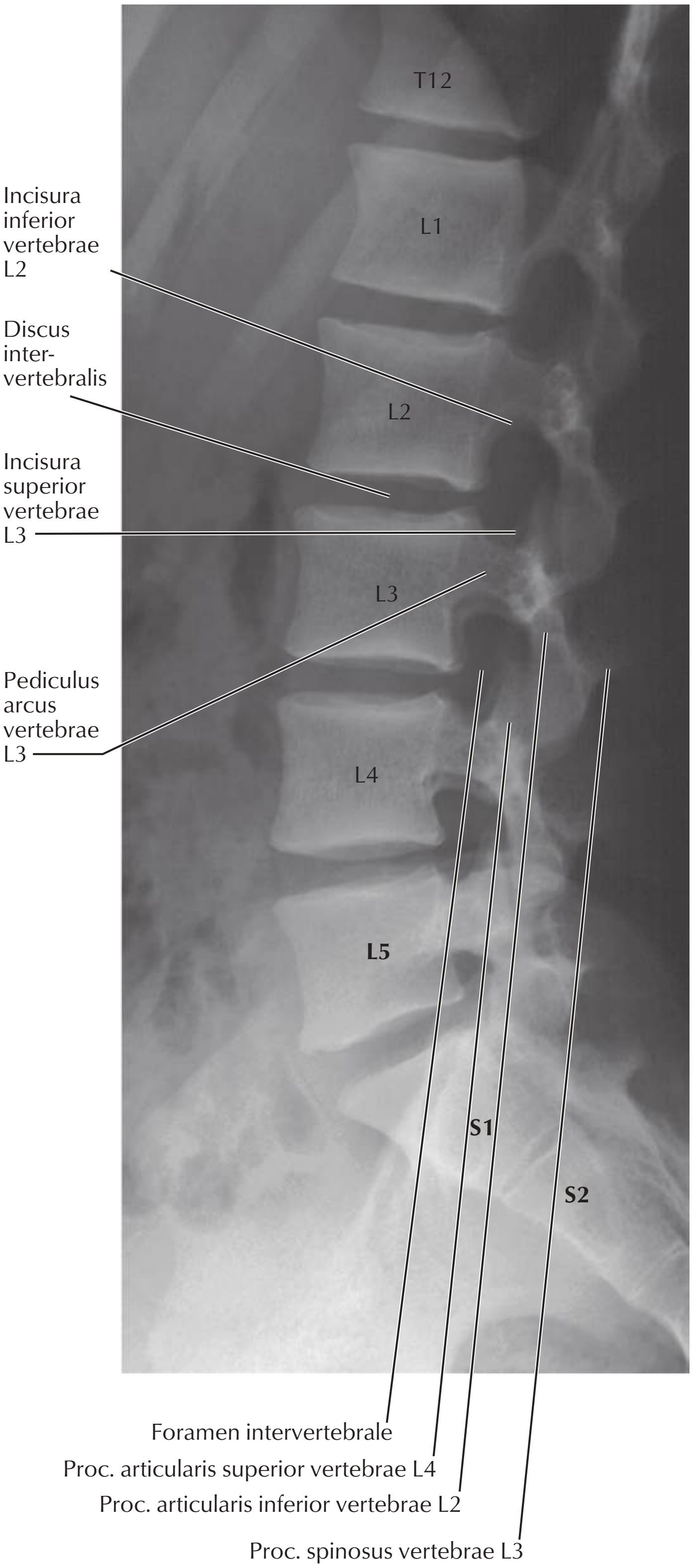

Air within the Trachea
Air within the Oesophagus
Level of Carina tracheae
Silhouette of Diaphragma
Costa 9
Corpus vertebrae T12
Pediculus arcus vertebrae L1
Foramen intervertebrale
Incisura inferior vertebrae L2
Facies intervertebralis superior vertebrae L3
Facies intervertebralis inferior vertebrae L3
Facies articularis inferior vertebrae L4
Discus intervertebralis L4-L5
Facies articularis superior vertebrae L5

Radiographs of vertebrae lumbales

Anteroposterior radiograph

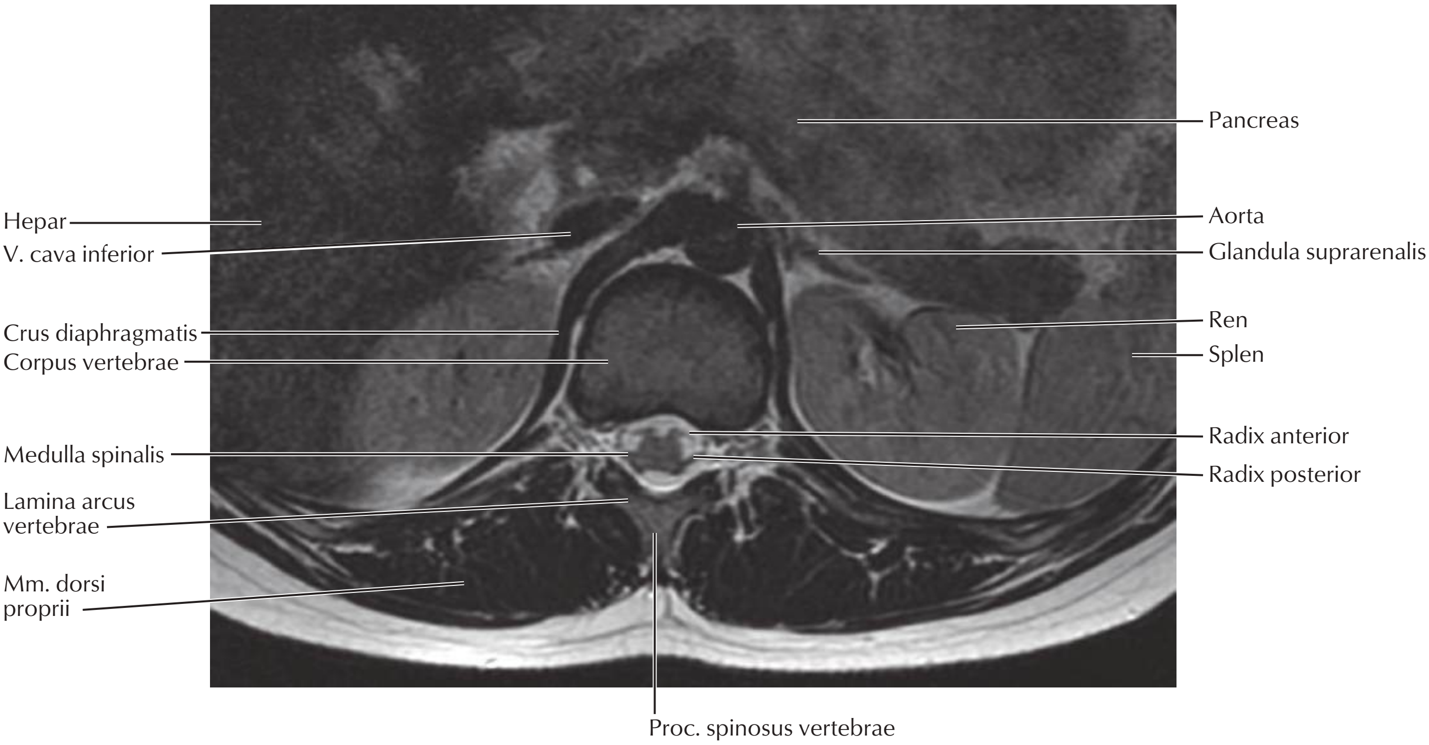

Proc. articularis superior vertebrae L1
Proc. articularis inferior vertebrae L1
Pediculus arcus vertebrae L3
Corpus vertebrae L3
Proc. transversus vertebrae L3
Proc. spinosus vertebrae L4
Lamina arcus vertebrae L4
Foramina sacralia

Lateral radiograph

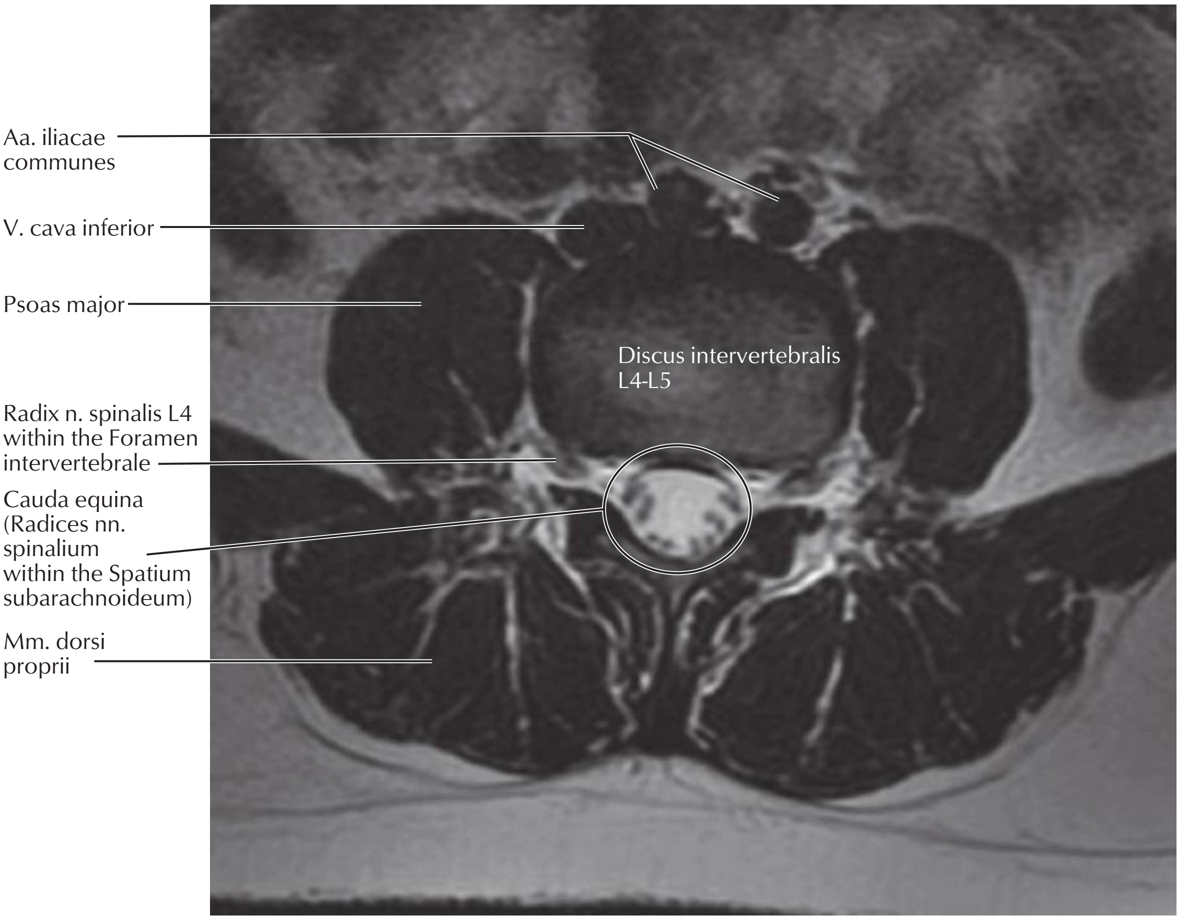

T12
L1
L2
L3
L4
L5
S1
S2
Incisura inferior vertebrae L2
Discus intervertebralis
Incisura superior vertebrae L3
Pediculus arcus vertebrae L3
Foramen intervertebrale
Proc. articularis superior vertebrae L4
Proc. articularis inferior vertebrae L2
Proc. spinosus vertebrae L3

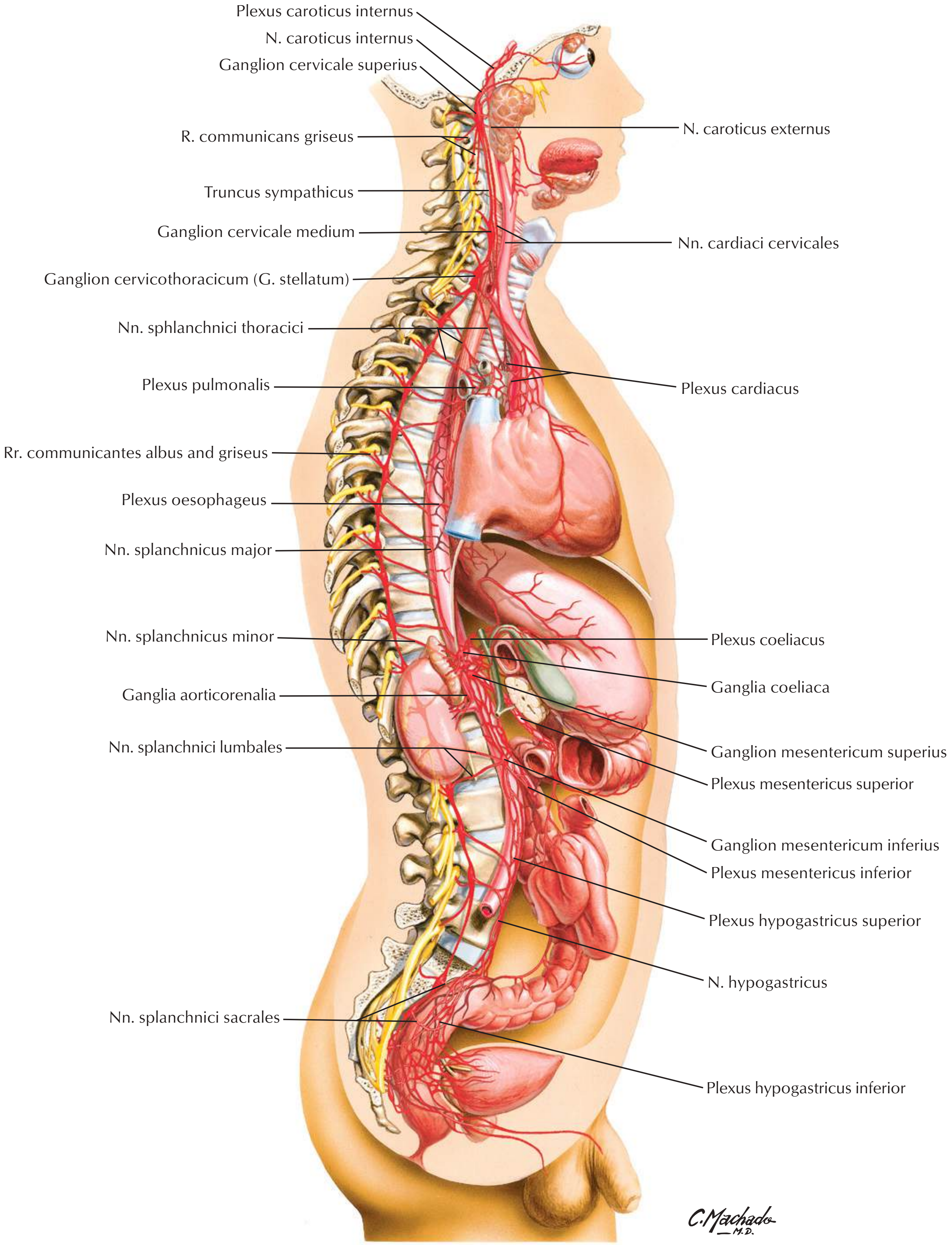
Note: *Corpora vertebrarum are numbered.*

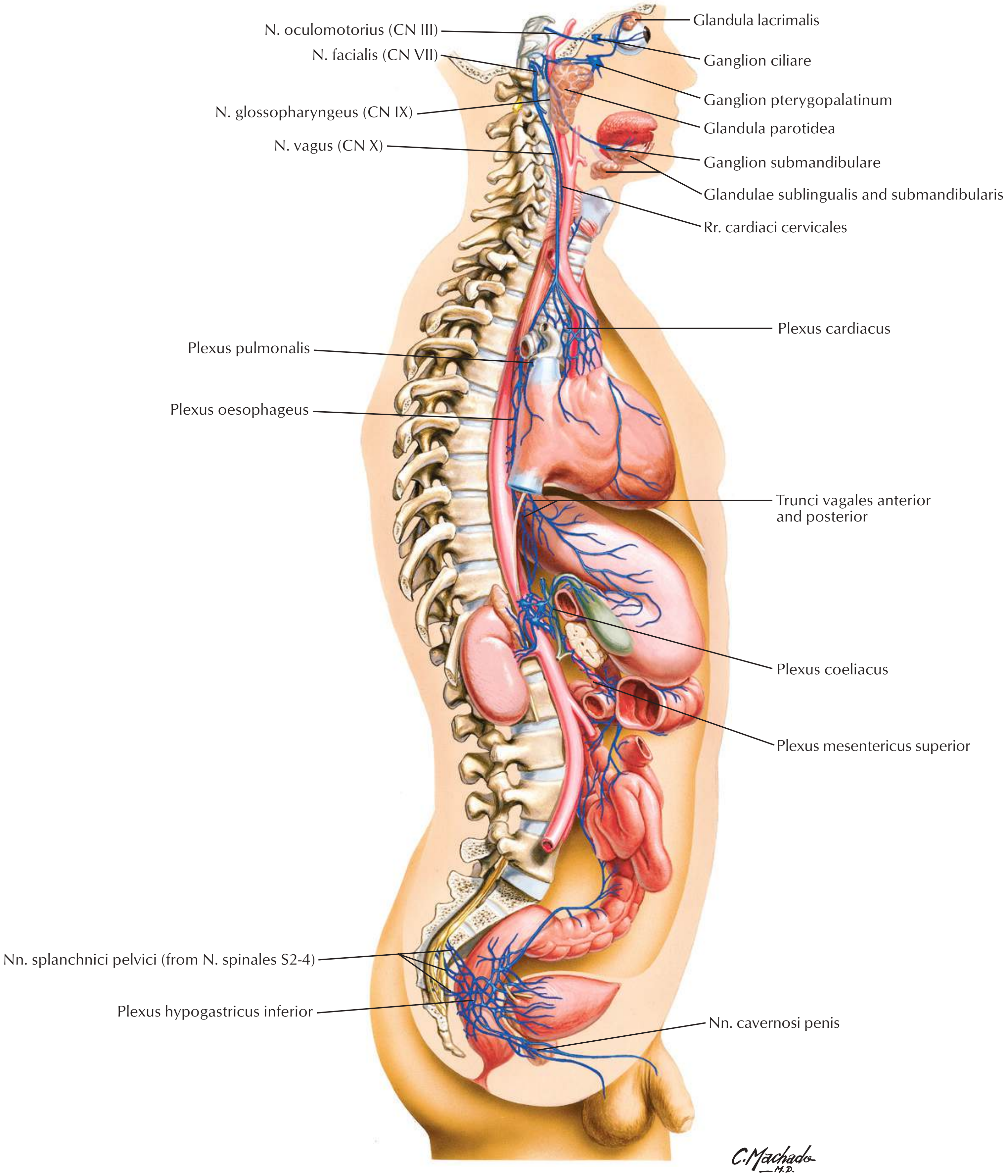
Axial T2-weighted MRI section through upper lumbar level, without contrast

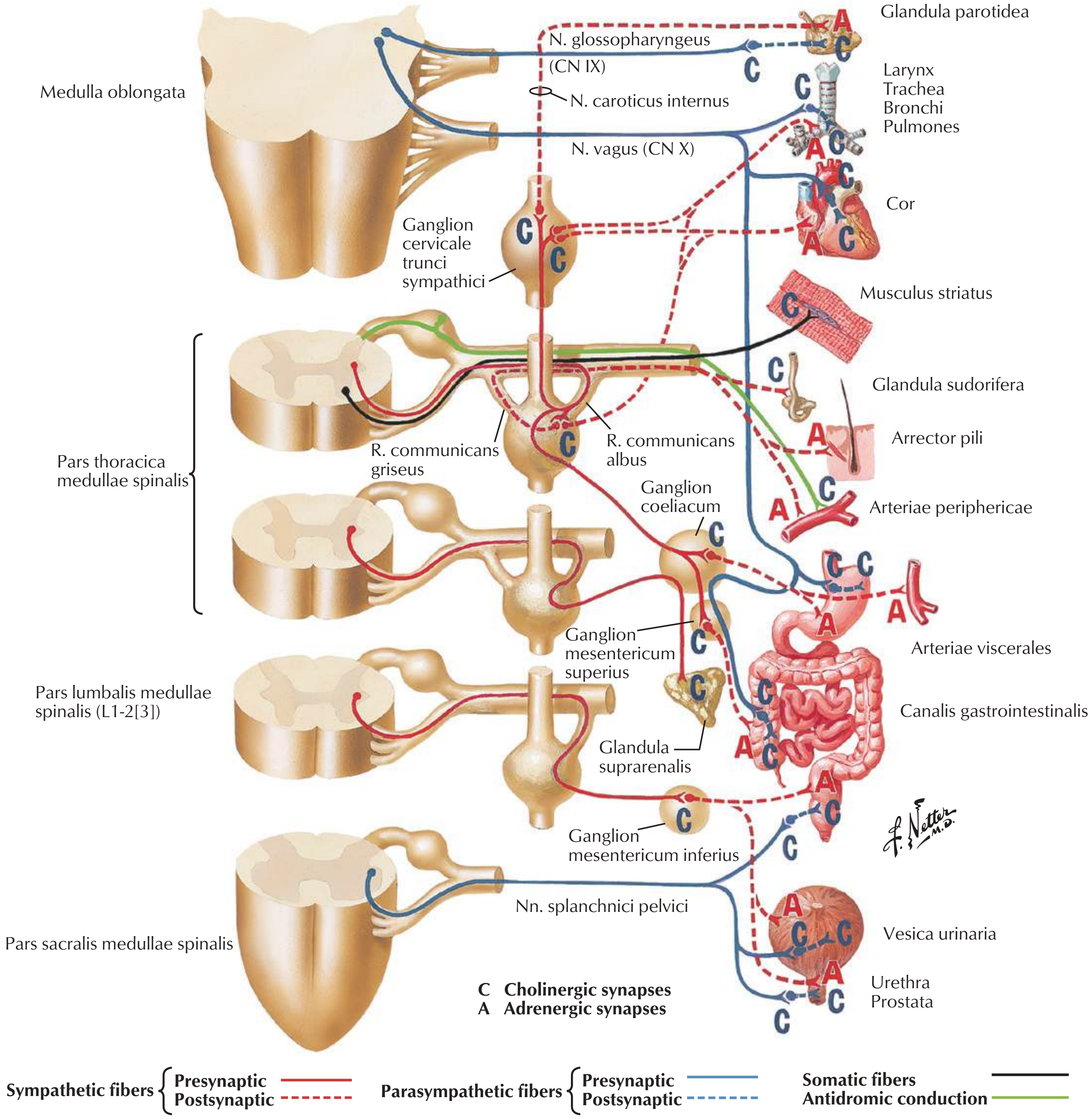

Pancreas
Hepar
V. cava inferior
Aorta
Glandula suprarenalis
Crus diaphragmatis
Corpus vertebrae
Ren
Splen
Medulla spinalis
Radix anterior
Radix posterior
Lamina arcus vertebrae
Mm. dorsi proprii
Proc. spinosus vertebrae

Axial T2-weighted MRI section through lower lumbar level, without contrast

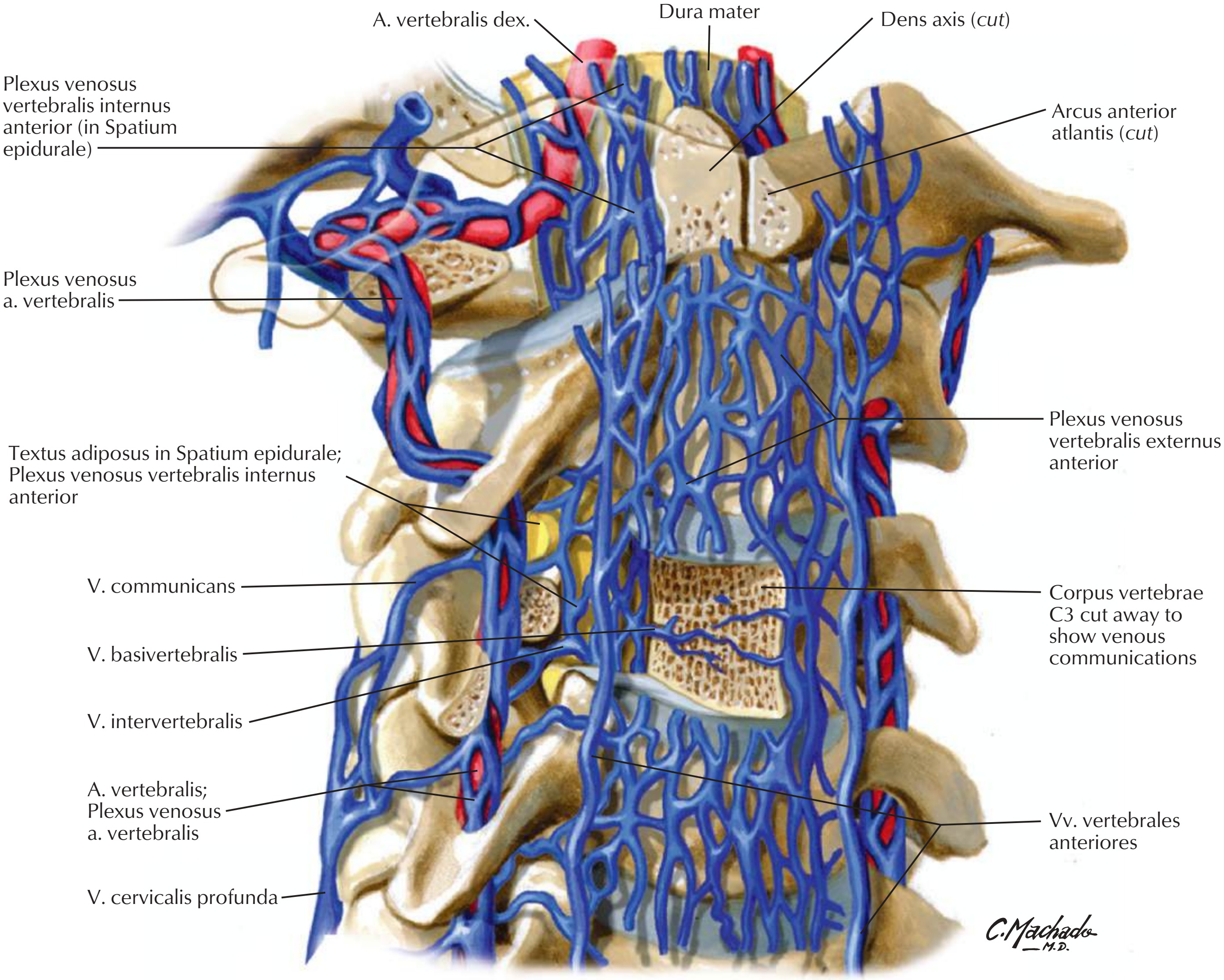

Aa. iliacae communes
V. cava inferior
Psoas major
Discus intervertebralis L4-L5
Radix n. spinalis L4 within the Foramen intervertebrale
Cauda equina (Radices nn. spinalium within the Spatium subarachnoideum)
Mm. dorsi proprii


Plexus caroticus internus
N. caroticus internus
Ganglion cervicale superius
R. communicans griseus
Truncus sympathicus
Ganglion cervicale medium
Ganglion cervicothoracicum (G. stellatum)
Nn. sphlanchnici thoracici
Plexus pulmonalis
Rr. communicantes albus and griseus
Plexus oesophageus
Nn. splanchnicus major
Nn. splanchnicus minor
Ganglia aorticorenalia
Nn. splanchnici lumbales
Nn. splanchnici sacrales
N. caroticus externus
Nn. cardiaci cervicales
Plexus cardiacus
Plexus coeliacus
Ganglia coeliaca
Ganglion mesentericum superius
Plexus mesentericus superior
Ganglion mesentericum inferius
Plexus mesentericus inferior
Plexus hypogastricus superior
N. hypogastricus
Plexus hypogastricus inferior
C.Machado M.D.

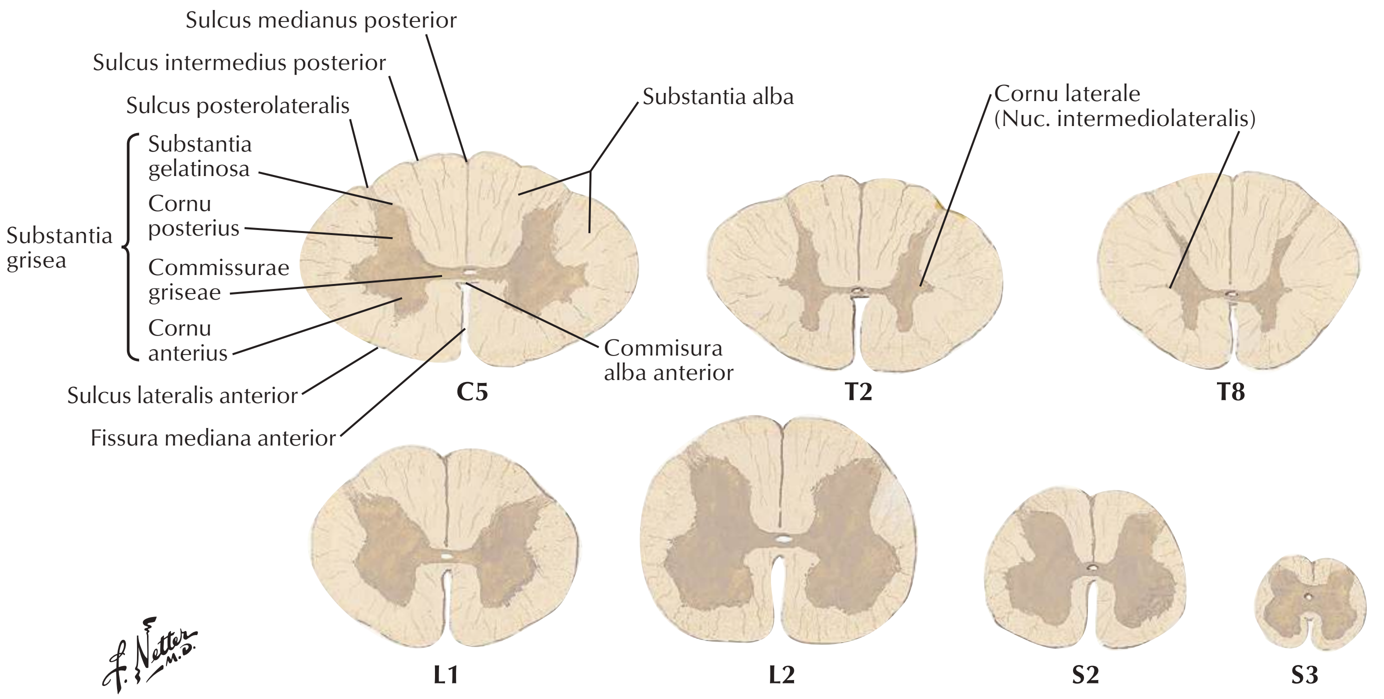

N. oculomotorius (CN III)
N. facialis (CN VII)
N. glossopharyngeus (CN IX)
N. vagus (CN X)
Glandula lacrimalis
Ganglion ciliare
Ganglion pterygopalatinum
Glandula parotidea
Ganglion submandibulare
Glandulae sublingualis and submandibularis
Rr. cardiaci cervicales
Plexus cardiacus
Plexus pulmonalis
Plexus oesophageus
Trunci vagales anterior and posterior
Plexus coeliacus
Plexus mesentericus superior
Nn. splanchnici pelvici (from N. spinales S2-4)
Plexus hypogastricus inferior
Nn. cavernosi penis
C.Machado M.D.


Glandula parotidea
N. glossopharyngeus
(CN IX)
Larynx
Trachea
Bronchi
Pulmones
Medulla oblongata
N. caroticus internus
N. vagus (CN X)
Cor
Ganglion
cervicale
trunci
sympathici
Musculus striatus
Glandula sudorifera
Arrector pili
Pars thoracica
medullae spinalis
R. communicans
griseus
R. communicans
albus
Ganglion
coeliacum
Arteriae periphericae
Arteriae viscerales
Ganglion
mesentericum
superius
Pars lumbalis medullae
spinalis (L1-2[3])
Canalis gastrointestinalis
Glandula
suprarenalis
Ganglion
mesentericum inferius
Nn. splanchnici pelvici
Pars sacralis medullae spinalis
Vesica urinaria
Urethra
Prostata
C
A
C Cholinergic synapses
A Adrenergic synapses
Sympathetic fibers
Presynaptic
Postsynaptic
Parasympathetic fibers
Presynaptic
Postsynaptic
Somatic fibers
Antidromic conduction

Vertebral Veins: Detail Showing Venous Communications

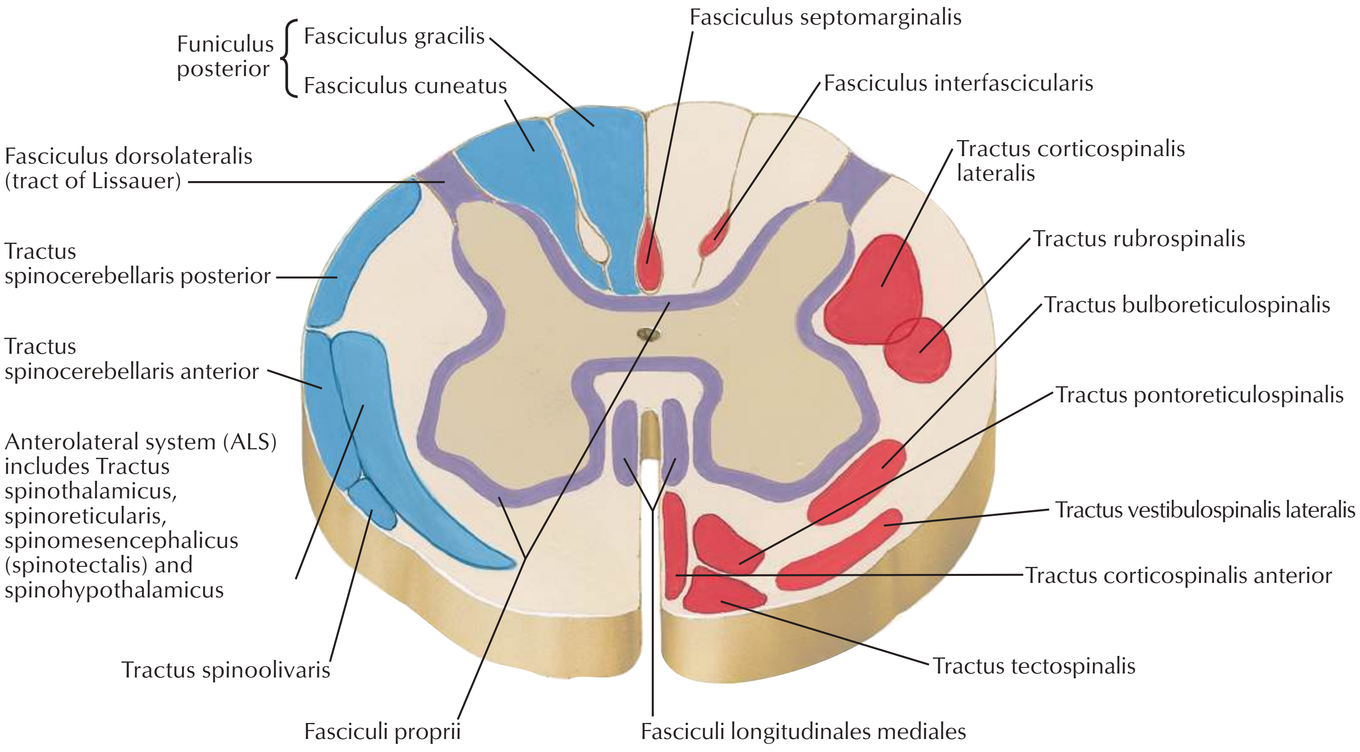

A. vertebralis dex.
Dura mater
Dens axis (*cut*)
Plexus venosus vertebralis internus anterior (in Spatium epidurale)
Arcus anterior atlantis (*cut*)
Plexus venosus a. vertebralis
Plexus venosus vertebralis externus anterior
Textus adiposus in Spatium epidurale; Plexus venosus vertebralis internus anterior
V. communicans
Corpus vertebrae C3 cut away to show venous communications
V. basivertebralis
V. intervertebralis
A. vertebralis; Plexus venosus a. vertebralis
Vv. vertebrales anteriores
V. cervicalis profunda
C. Machado M.D.

Sections through medulla spinalis at various levels


Sulcus medianus posterior
Sulcus intermedius posterior
Sulcus posterolateralis
Substantia alba
Cornu laterale (Nuc. intermediolateralis)
Substantia grisea
Substantia gelatinosa
Cornu posterius
Commissurae griseae
Cornu anterius
Sulcus lateralis anterior
Fissura mediana anterior
Commisura alba anterior
C5
T2
T8
L1
L2
S2
S3

Principal fiber tracts of medulla spinalis

🟦 **Ascending pathways**
🟥 **Descending pathways**
🟪 **Fibers passing in both directions**


Funiculus posterior
Fasciculus gracilis
Fasciculus cuneatus
Fasciculus septomarginalis
Fasciculus interfascicularis
Fasciculus dorsolateralis (tract of Lissauer)
Tractus corticospinalis lateralis
Tractus rubrospinalis
Tractus spinocerebellaris posterior
Tractus bulboreticulospinalis
Tractus spinocerebellaris anterior
Tractus pontoreticulospinalis
Anterolateral system (ALS) includes Tractus spinothalamicus, spinoreticularis, spinomesencephalicus (spinotectalis) and spinohypothalamicus
Tractus vestibulospinalis lateralis
Tractus corticospinalis anterior
Tractus spinoolivaris
Tractus tectospinalis
Fasciculi proprii
Fasciculi longitudinales mediales

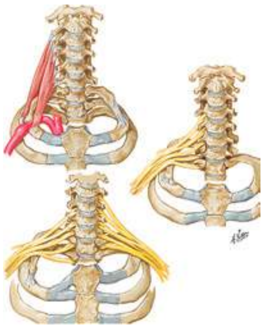
THORAX

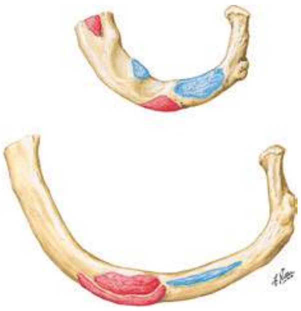
4

Surface Anatomy 187
Mammary Gland 188-191
Body Wall 192-201
Lungs 202-214
Heart 215-233
Mediastinum 234-243
Regional Scans 244
Cross-Sectional Anatomy 245-248
Structures with High Clinical Significance Tables 4.1-4.2
Muscle Table Table 4.3
Electronic Bonus Plates BP44-BP57

ELECTRONIC BONUS PLATES

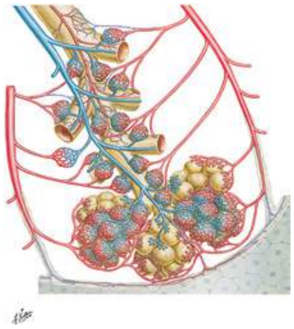
BP44 Respiratory System

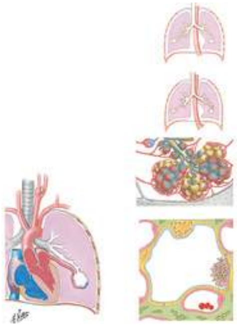

BP45 Cervical Ribs and Related Anomalies

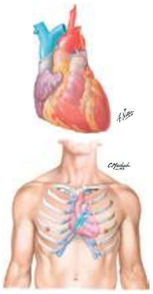

BP46 Muscle Attachments of Ribs

BP47 Muscles of Respiration

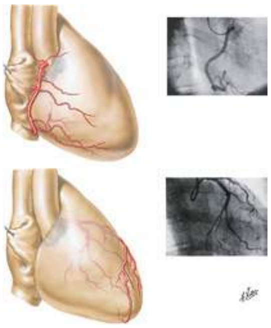
BP48 Intrapulmonary Airways: Schema


BP49 Intrapulmonary Blood Circulation: Schema

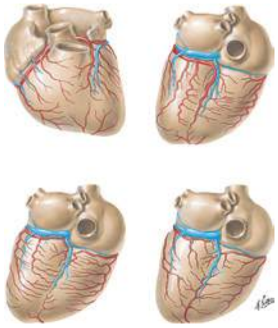

BP50 Gas Exchange


BP51 Anterior Aspect of Heart

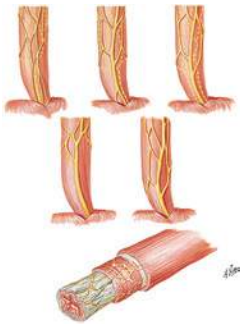
ELECTRONIC BONUS PLATES—*cont'd*



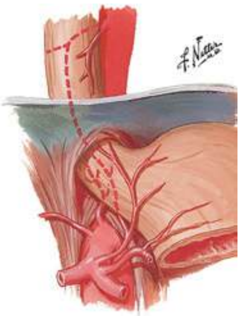
BP52 Coronary Arteries: Right Anterior Oblique Views with Arteriograms



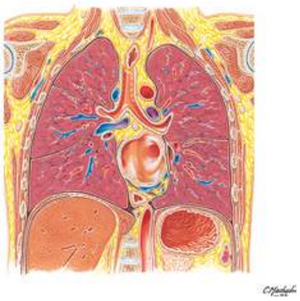
BP53 Coronary Arteries and Cardiac Veins: Variations



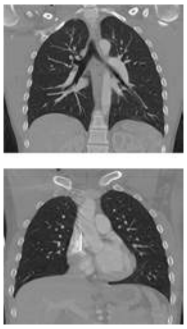
BP54 Intrinsic Nerves and Variations in Nerves of Esophagus



BP55 Arteries of Esophagus: Variations

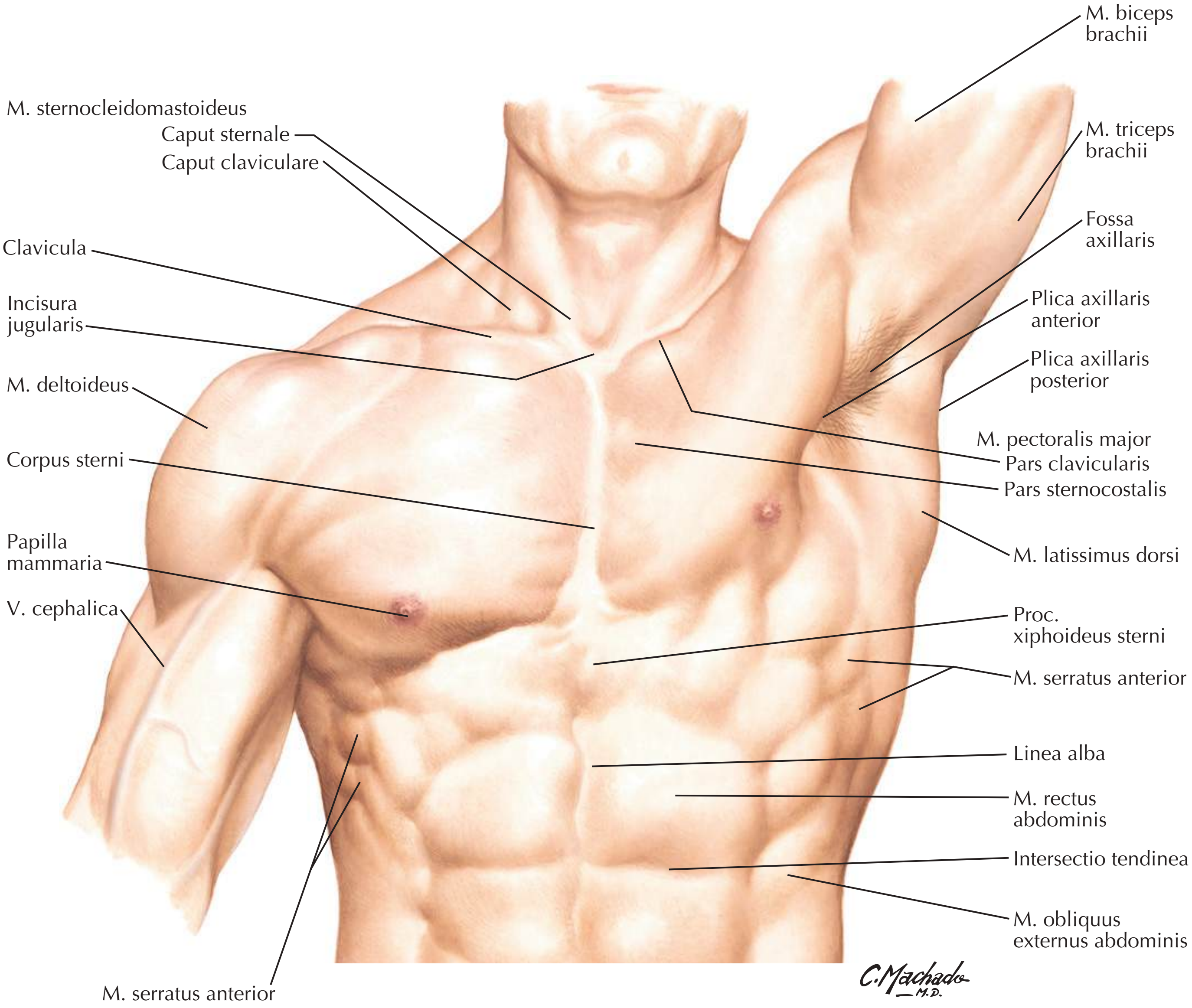


BP56 Thorax: Coronal Section (Midaxillary Line, Tracheal Bifurcation, Left Atrium)

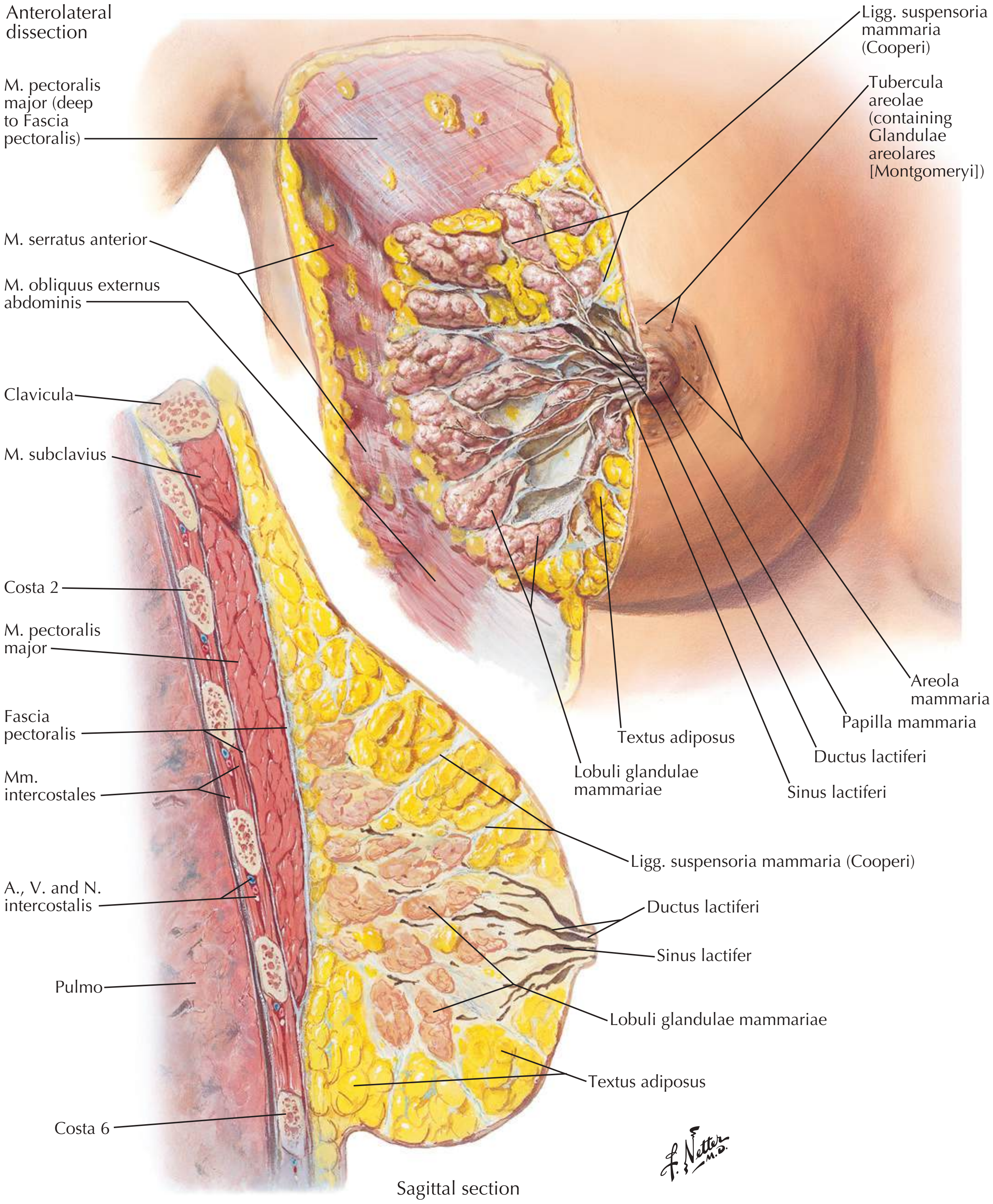


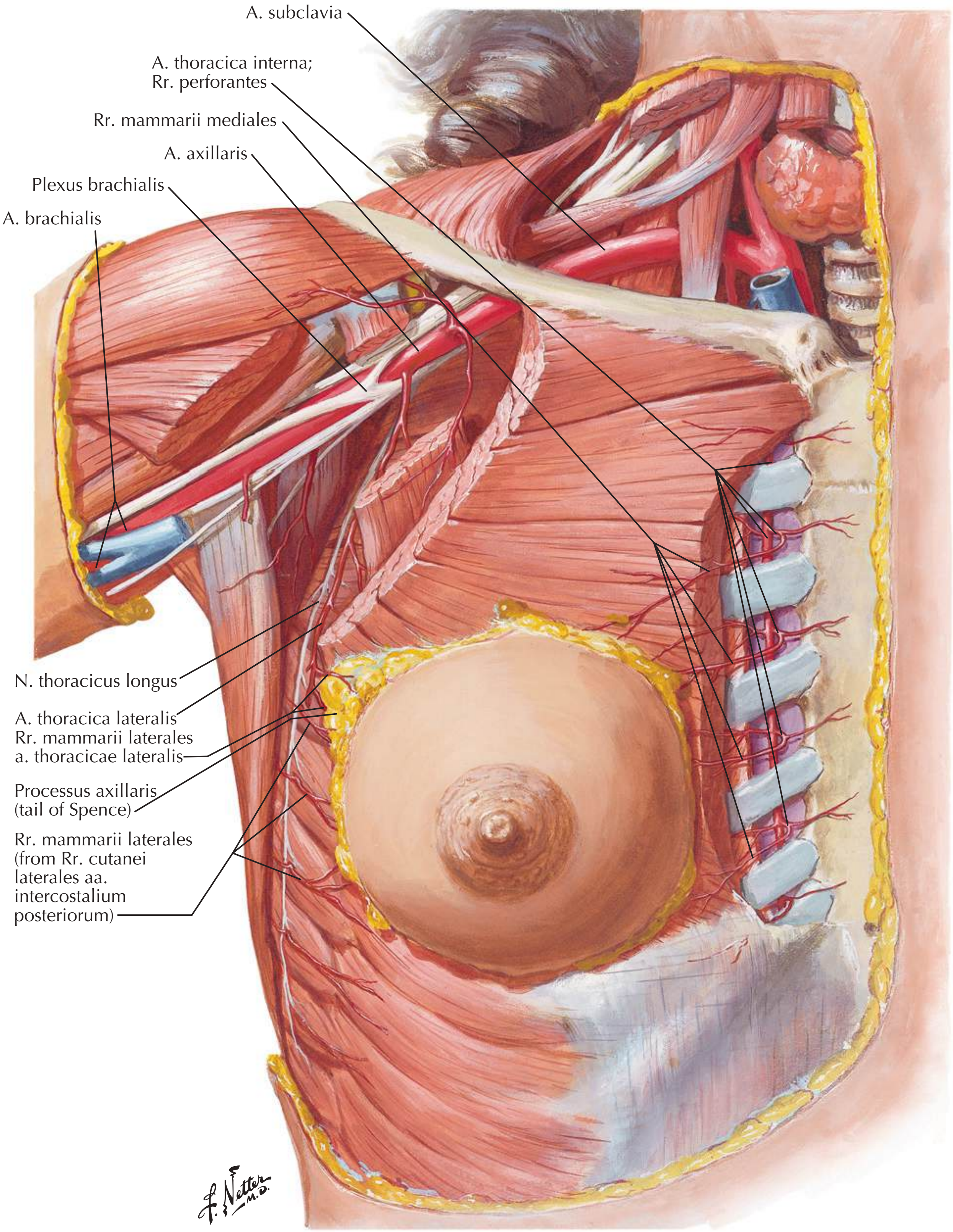
BP57 Thorax: Coronal CTs

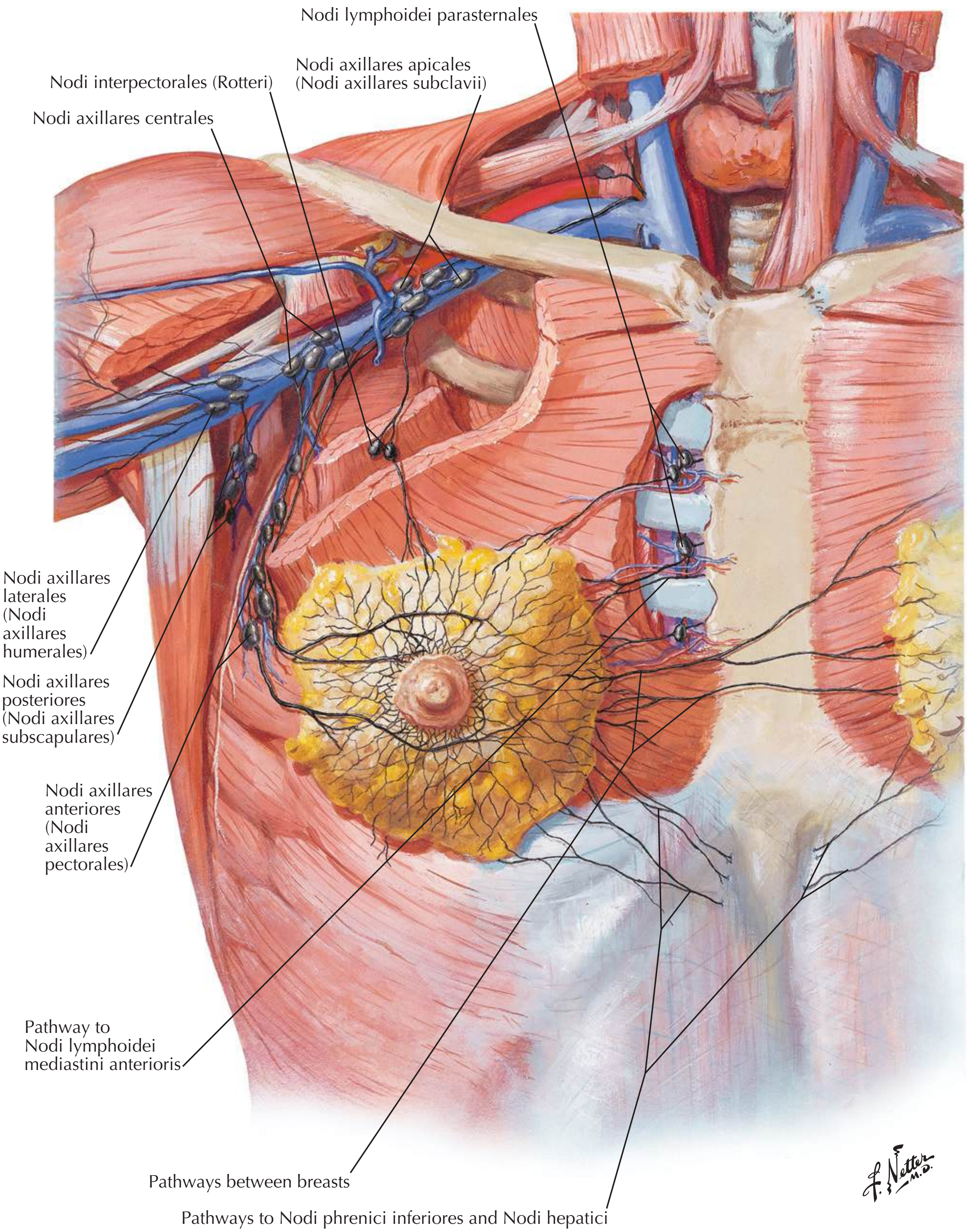
See also Plates 171, 194


M. sternocleidomastoideus
Caput sternale
Caput claviculare
Clavicula
Incisura jugularis
M. deltoideus
Corpus sterni
Papilla mammaria
V. cephalica
M. serratus anterior
M. biceps brachii
M. triceps brachii
Fossa axillaris
Plica axillaris anterior
Plica axillaris posterior
M. pectoralis major
Pars clavicularis
Pars sternocostalis
M. latissimus dorsi
Proc. xiphoideus sterni
M. serratus anterior
Linea alba
M. rectus abdominis
Intersectio tendinea
M. obliquus externus abdominis
C. Machado M.D.

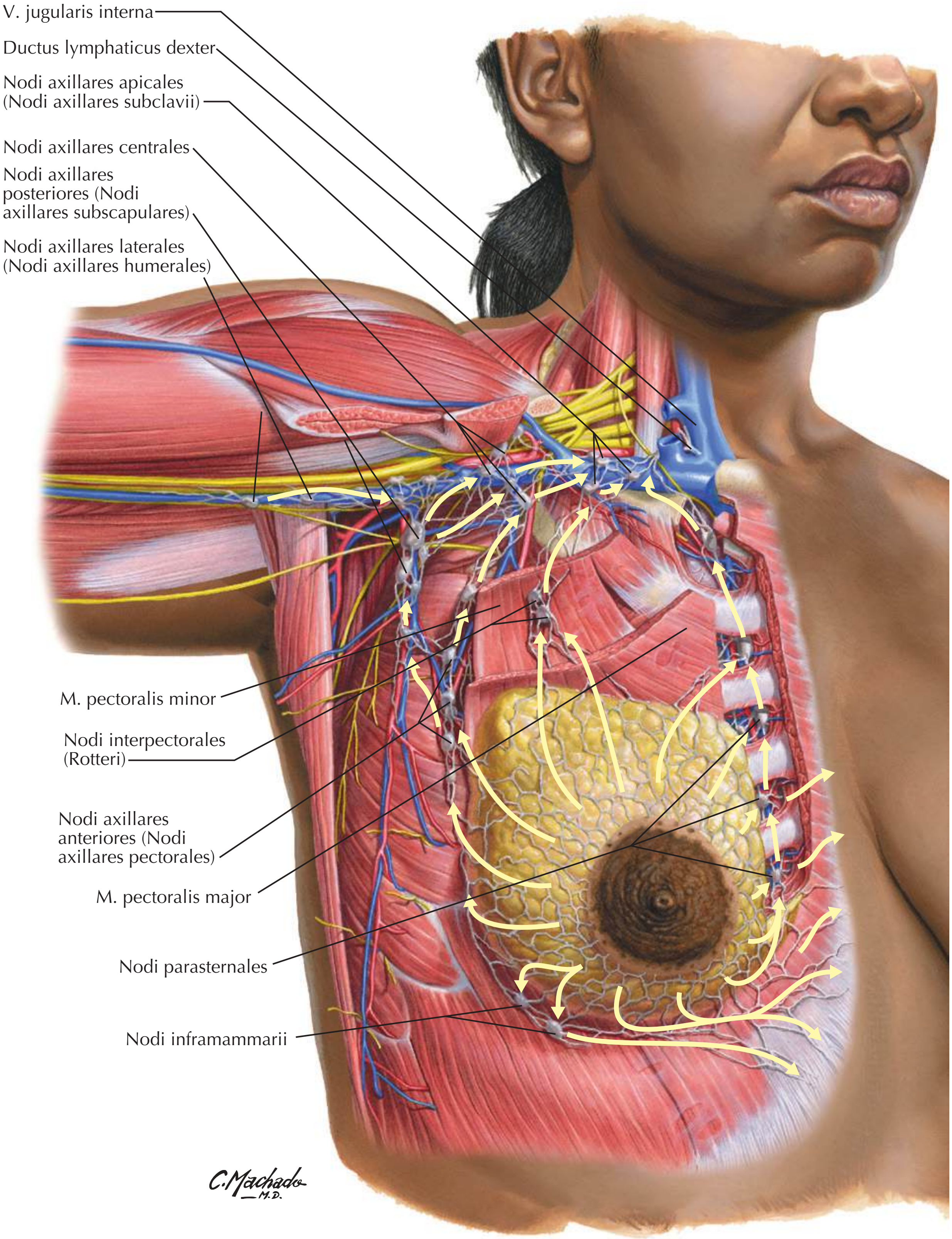
Mammary Gland

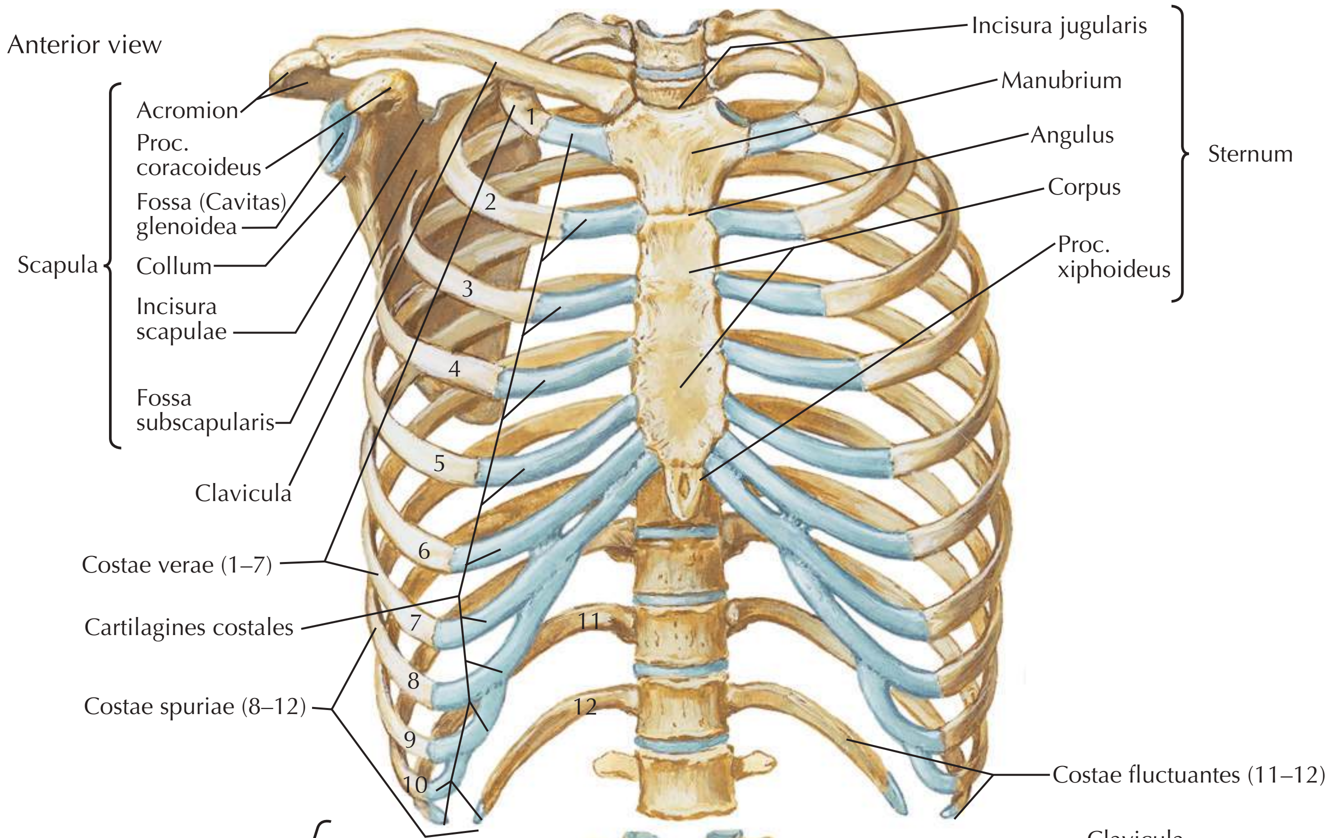

Anterolateral dissection
M. pectoralis major (deep to Fascia pectoralis)
M. serratus anterior
M. obliquus externus abdominis
Ligg. suspensoria mammaria (Cooperi)
Tubercula areolae (containing Glandulae areolares [Montgomeryi])
Areola mammaria
Papilla mammaria
Textus adiposus
Ductus lactiferi
Lobuli glandulae mammariae
Sinus lactiferi
Clavicula
M. subclavius
Costa 2
M. pectoralis major
Fascia pectoralis
Mm. intercostales
A., V. and N. intercostalis
Pulmo
Costa 6
Ligg. suspensoria mammaria (Cooperi)
Ductus lactiferi
Sinus lactifer
Lobuli glandulae mammariae
Textus adiposus
Sagittal section

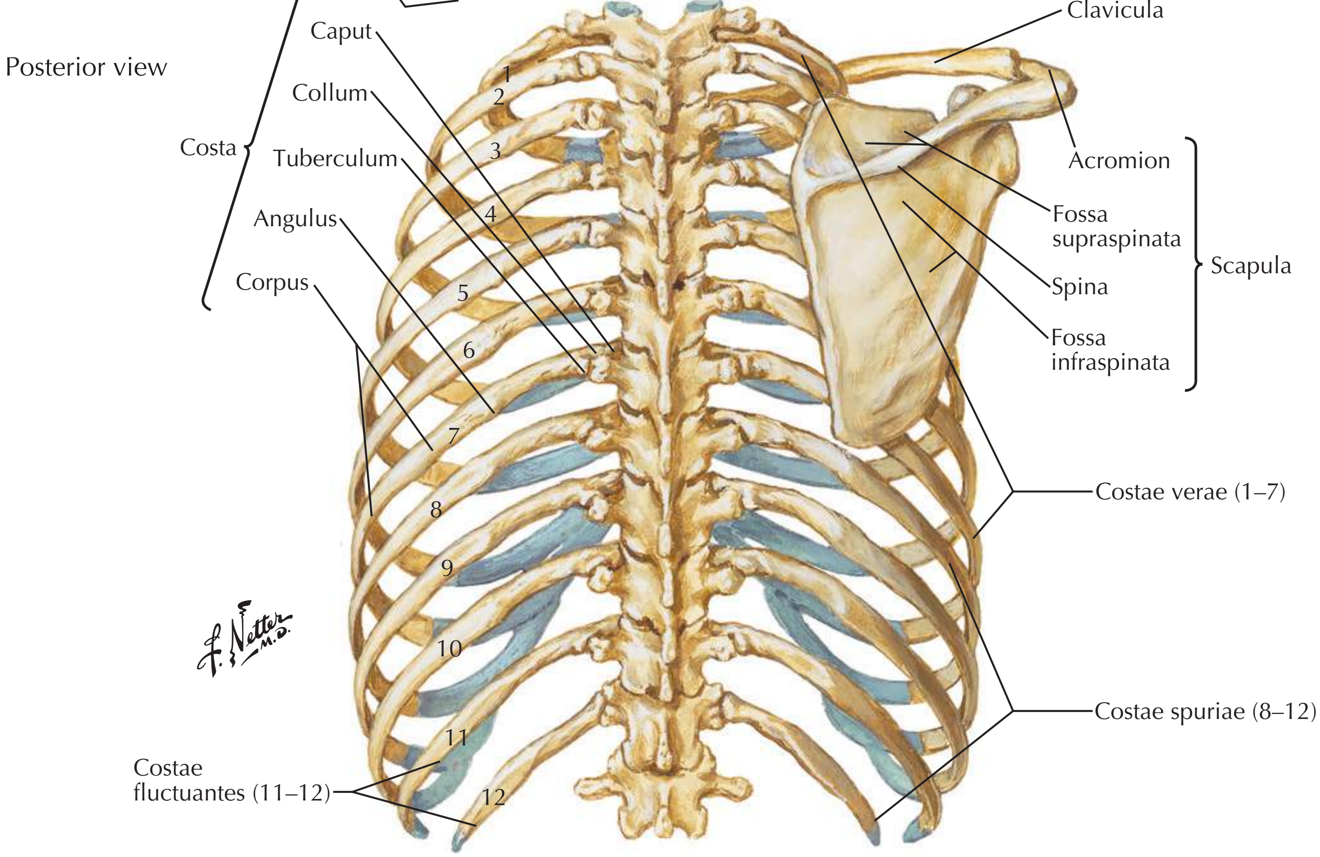

A. subclavia
A. thoracica interna;
Rr. perforantes
Rr. mammarii mediales
A. axillaris
Plexus brachialis
A. brachialis
N. thoracicus longus
A. thoracica lateralis
Rr. mammarii laterales
a. thoracicae lateralis
Processus axillaris
(tail of Spence)
Rr. mammarii laterales
(from Rr. cutanei
laterales aa.
intercostalium
posteriorum)
F. Netter M.D.

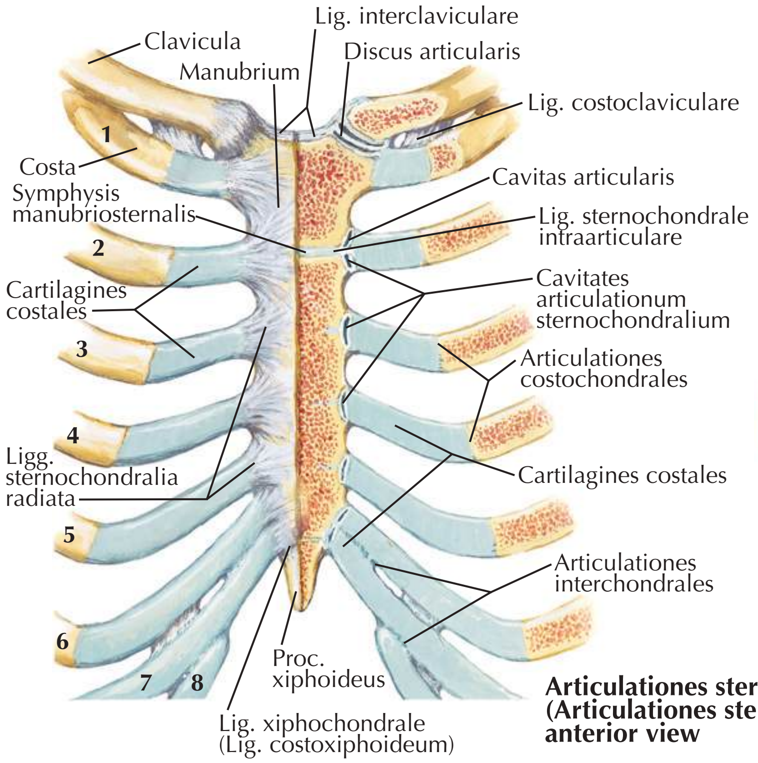

Nodi lymphoidei parasternales
Nodi axillares apicales (Nodi axillares subclavii)
Nodi interpectorales (Rotteri)
Nodi axillares centrales
Nodi axillares laterales (Nodi axillares humerales)
Nodi axillares posteriores (Nodi axillares subscapulares)
Nodi axillares anteriores (Nodi axillares pectorales)
Pathway to Nodi lymphoidei mediastini anterioris
Pathways between breasts
Pathways to Nodi phrenici inferiores and Nodi hepatici

See also Plate 190


V. jugularis interna
Ductus lymphaticus dexter
Nodi axillares apicales (Nodi axillares subclavii)
Nodi axillares centrales
Nodi axillares posteriores (Nodi axillares subscapulares)
Nodi axillares laterales (Nodi axillares humerales)
M. pectoralis minor
Nodi interpectorales (Rotteri)
Nodi axillares anteriores (Nodi axillares pectorales)
M. pectoralis major
Nodi parasternales
Nodi inframammarii
C. Machado M.D.

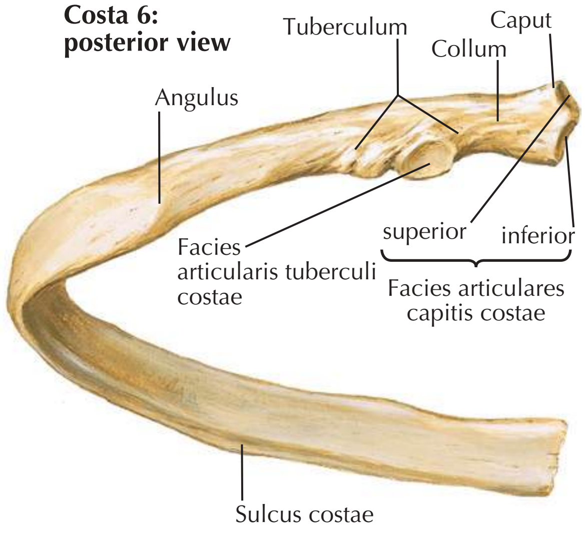

Anterior view
Acromion
Proc. coracoideus
Fossa (Cavitas) glenoidea
Scapula
Collum
Incisura scapulae
Fossa subscapularis
Clavicula
Costae verae (1–7)
Cartilagines costales
Costae spuriae (8–12)
1
2
3
4
5
6
7
8
9
10
11
12
Incisura jugularis
Manubrium
Angulus
Corpus
Proc. xiphoideus
Sternum
Costae fluctuantes (11–12)


Posterior view
Caput
Collum
Costa
Tuberculum
Angulus
Corpus
1
2
3
4
5
6
7
8
9
10
11
12
Clavicula
Acromion
Fossa supraspinata
Spina
Scapula
Fossa infraspinata
Costae verae (1–7)
Costae spuriae (8–12)
Costae fluctuantes (11–12)

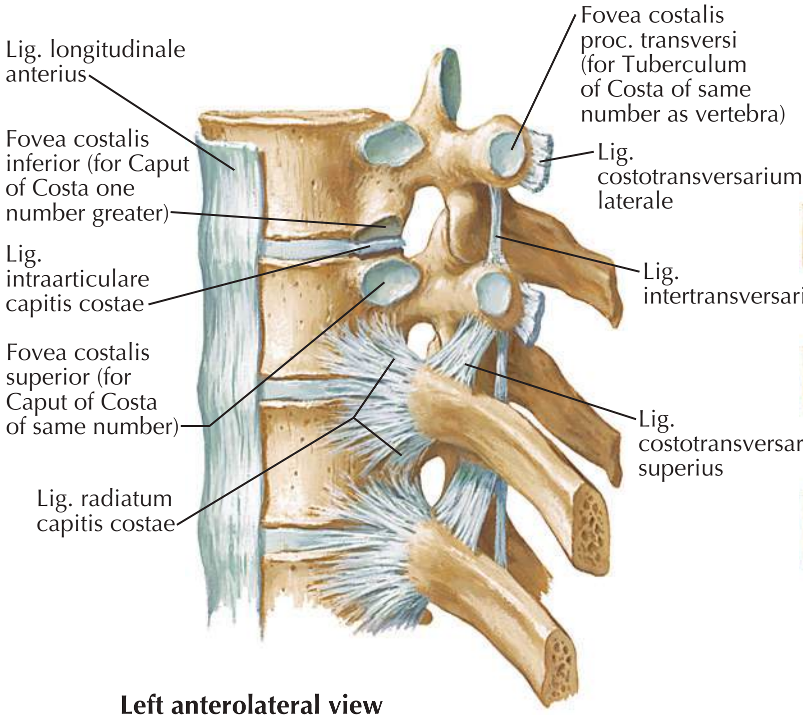

Lig. interclaviculare
Clavicula
Discus articularis
Manubrium
Lig. costoclaviculare
1
Costa
Cavitas articularis
Symphysis manubriosternalis
Lig. sternochondrale intraarticulare
2
Cartilagines costales
Cavitates articulationum sternochondralium
3
Articulationes costochondrales
4
Ligg. sternochondralia radiata
Cartilagines costales
5
Articulationes interchondrales
6
7
8
Proc. xiphoideus
Lig. xiphochondrale (Lig. costoxiphoideum)

Articulationes sternochondrales (Articulationes sternocostales): anterior view

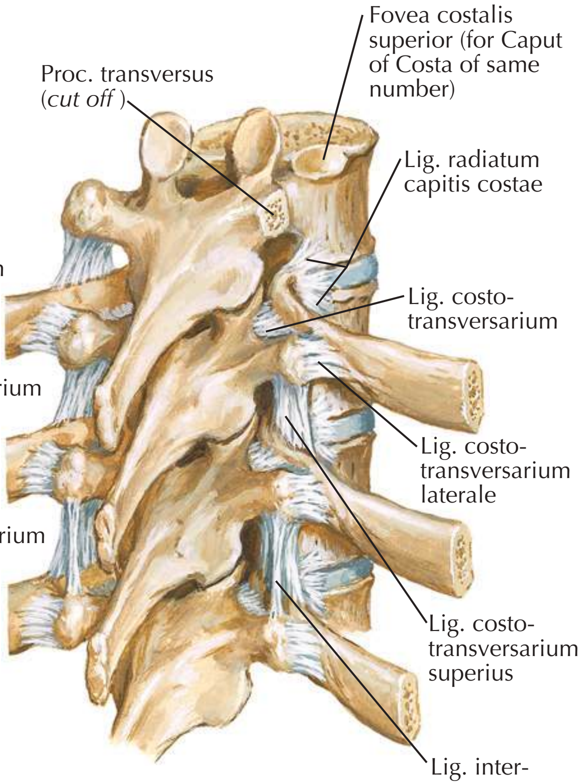
Costa 6: posterior view


Tuberculum
Caput
Collum
Angulus
Facies articularis tuberculi costae
superior
inferior
Facies articulares capitis costae
Sulcus costae

Note: The typical caput costae articulates with the fovea costalis superior of the vertebra thoracica of the same number (by its facies articularis inferior), the fovea costalis inferior of the vertebra above (by its facies articularis superior), and the discus intervertebralis between the two vertebrae. Tuberculum costae articulates with the proc. transversus of the vertebra of the same number.

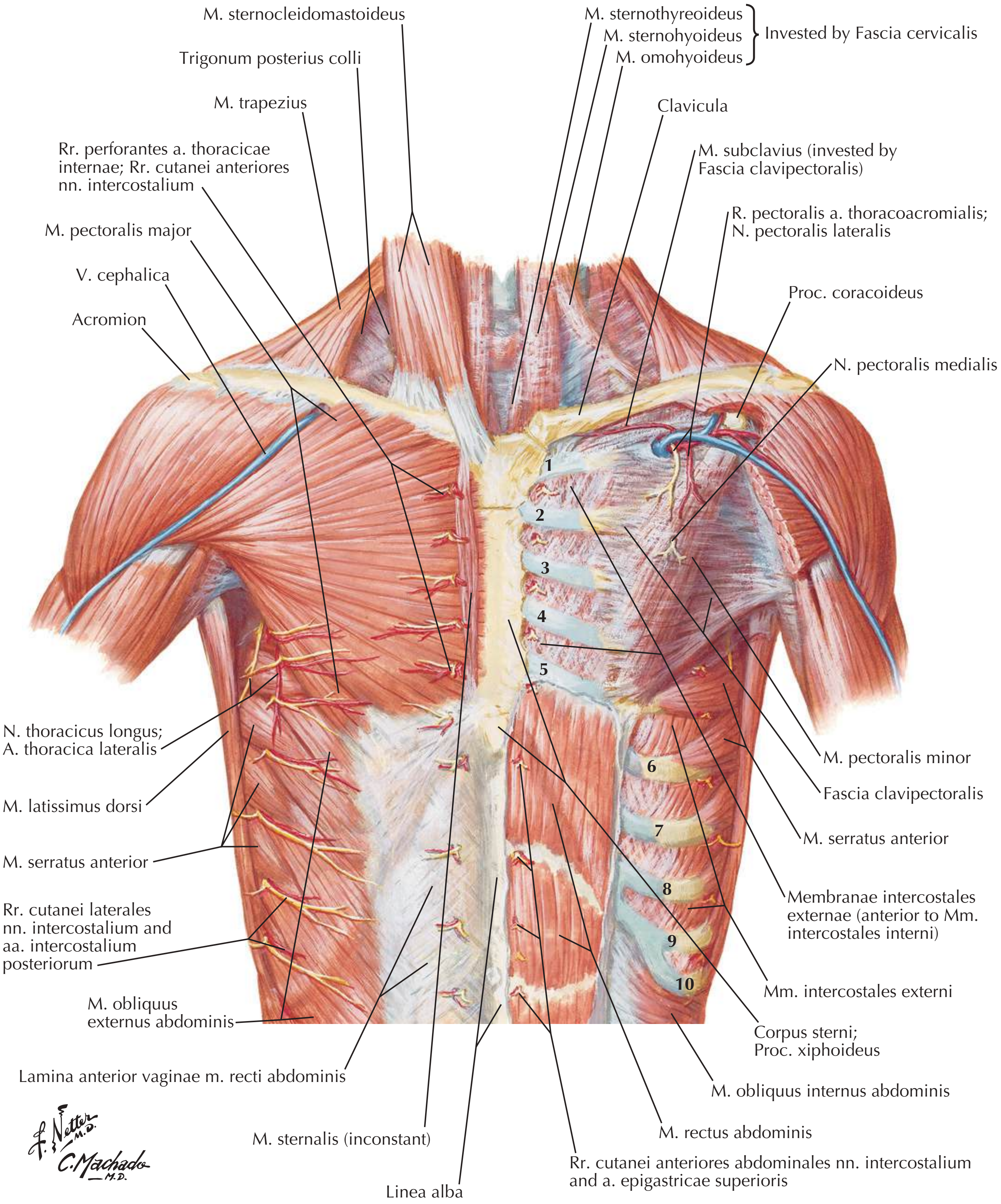

Lig. longitudinale anterius
Fovea costalis proc. transversi (for Tuberculum of Costa of same number as vertebra)
Fovea costalis inferior (for Caput of Costa one number greater)
Lig. costotransversarium laterale
Lig. intraarticulare capitis costae
Lig. intertransversarium
Fovea costalis superior (for Caput of Costa of same number)
Lig. costotransversarium superius
Lig. radiatum capitis costae

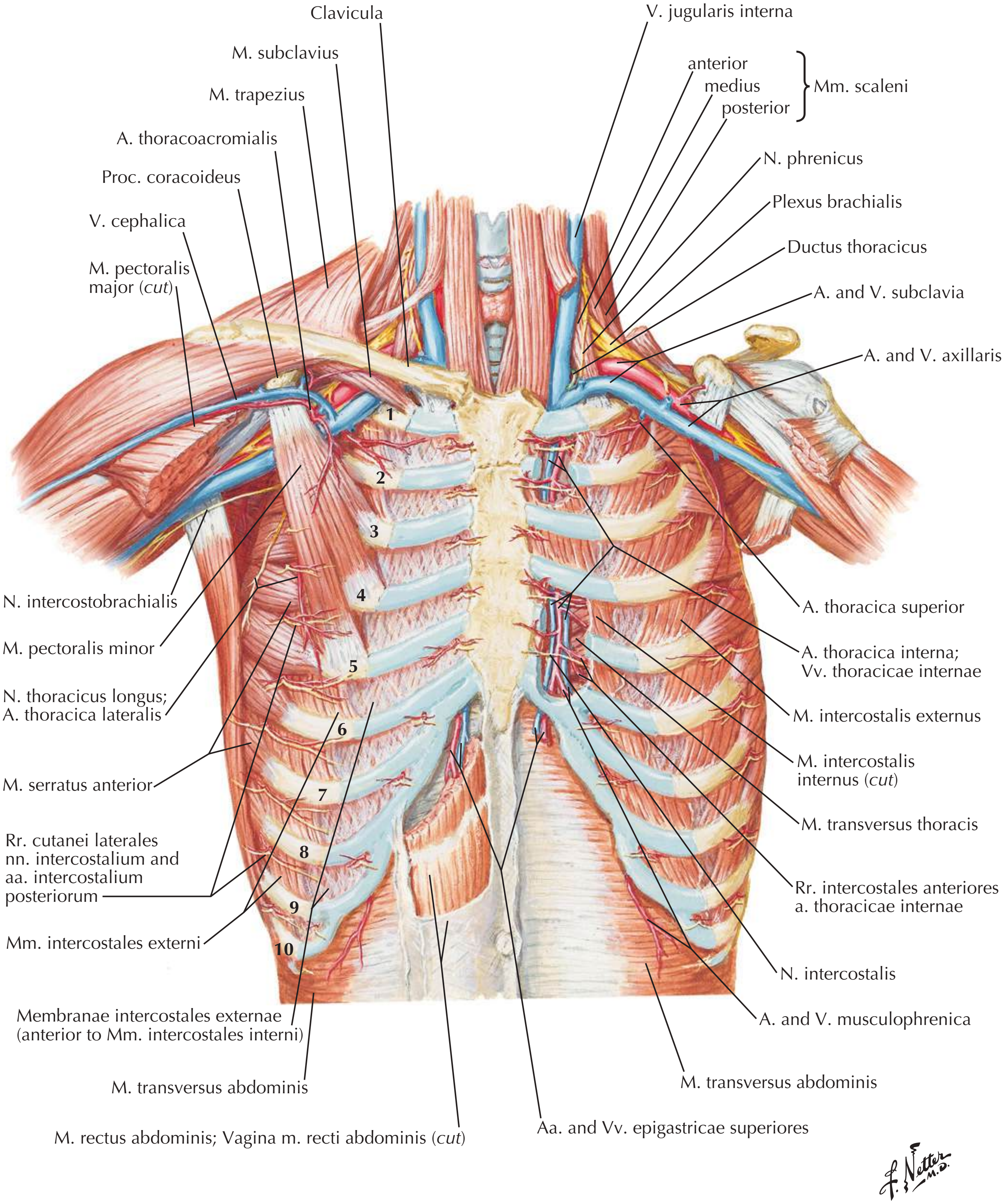
Left anterolateral view

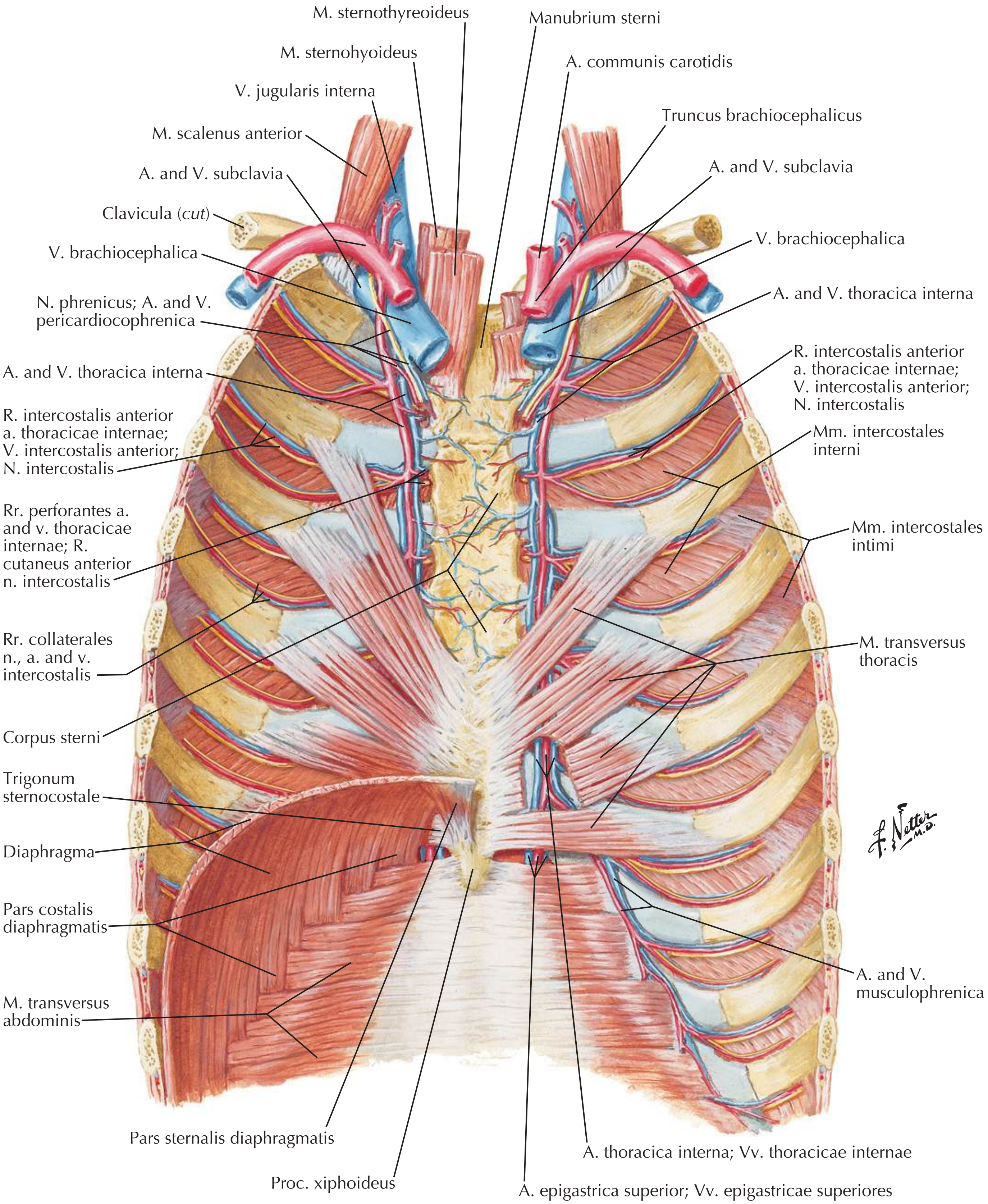

Proc. transversus (*cut off*)
Fovea costalis superior (for Caput of Costa of same number)
Lig. radiatum capitis costae
Lig. costo-transversarium
Lig. costo-transversarium laterale
Lig. costo-transversarium superius
Lig. inter-transversarium

Right posterolateral view

Anterior Thoracic Wall

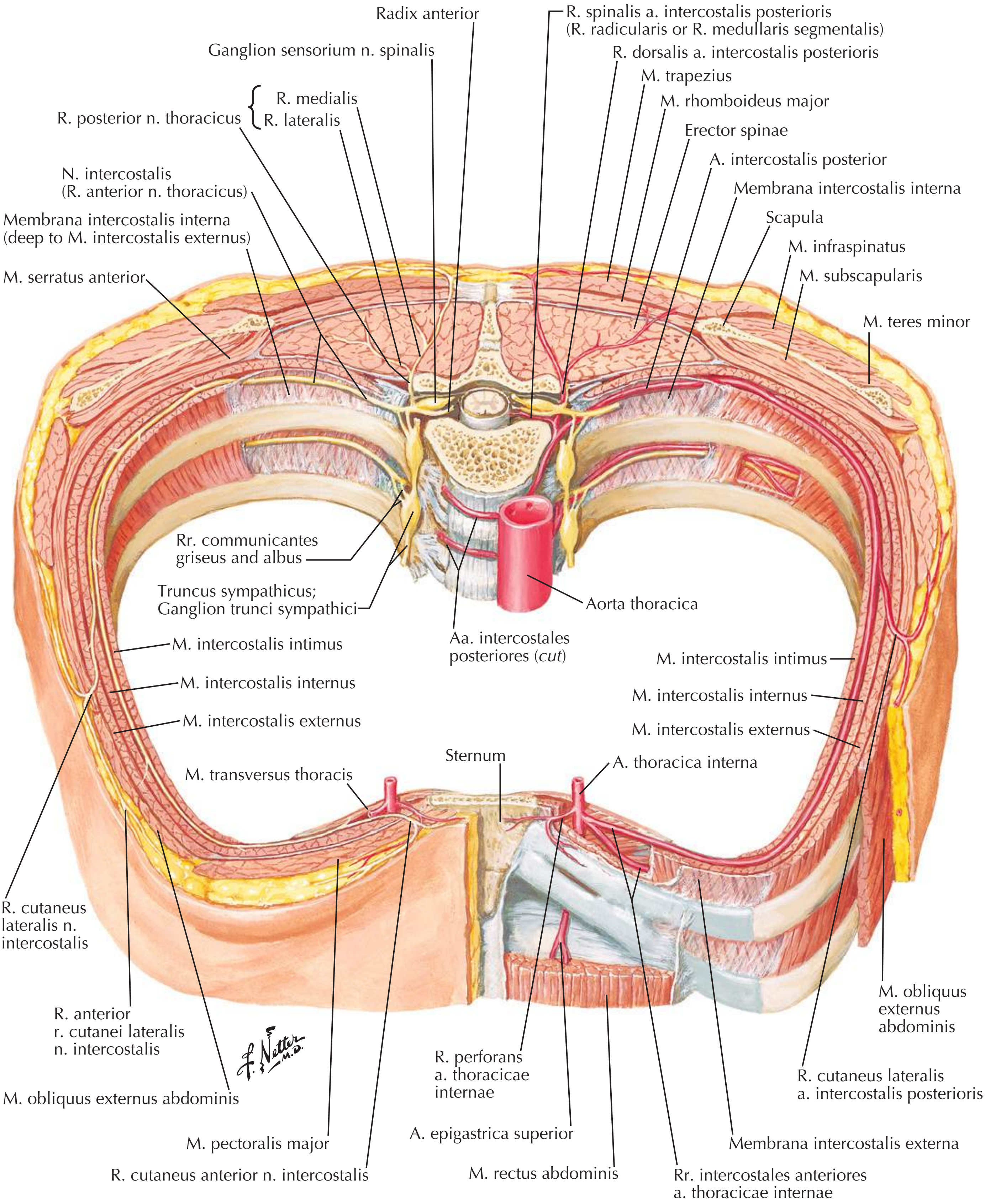

M. sternocleidomastoideus
Trigonum posterius colli
M. trapezius
Rr. perforantes a. thoracicae internae; Rr. cutanei anteriores nn. intercostalium
M. pectoralis major
V. cephalica
Acromion
N. thoracicus longus; A. thoracica lateralis
M. latissimus dorsi
M. serratus anterior
Rr. cutanei laterales nn. intercostalium and aa. intercostalium posteriorum
M. obliquus externus abdominis
Lamina anterior vaginae m. recti abdominis
M. sternalis (inconstant)
Linea alba
M. sternothyreoideus
M. sternohyoideus
M. omohyoideus
Invested by Fascia cervicalis
Clavicula
M. subclavius (invested by Fascia clavipectoralis)
R. pectoralis a. thoracoacromialis; N. pectoralis lateralis
Proc. coracoideus
N. pectoralis medialis
M. pectoralis minor
Fascia clavipectoralis
M. serratus anterior
Membranae intercostales externae (anterior to Mm. intercostales interni)
Mm. intercostales externi
Corpus sterni; Proc. xiphoideus
M. obliquus internus abdominis
M. rectus abdominis
Rr. cutanei anteriores abdominales nn. intercostalium and a. epigastricae superioris
1
2
3
4
5
6
7
8
9
10
F. Netter M.D.
C. Machado M.D.


Clavicula
M. subclavius
M. trapezius
A. thoracoacromialis
Proc. coracoideus
V. cephalica
M. pectoralis major (cut)
V. jugularis interna
anterior
medius
posterior
Mm. scaleni
N. phrenicus
Plexus brachialis
Ductus thoracicus
A. and V. subclavia
A. and V. axillaris
1
2
3
4
5
6
7
8
9
10
N. intercostobrachialis
M. pectoralis minor
N. thoracicus longus; A. thoracica lateralis
M. serratus anterior
Rr. cutanei laterales nn. intercostalium and aa. intercostalium posteriorum
Mm. intercostales externi
Membranae intercostales externae (anterior to Mm. intercostales interni)
M. transversus abdominis
M. rectus abdominis; Vagina m. recti abdominis (cut)
A. thoracica superior
A. thoracica interna; Vv. thoracicae internae
M. intercostalis externus
M. intercostalis internus (cut)
M. transversus thoracis
Rr. intercostales anteriores a. thoracicae internae
N. intercostalis
A. and V. musculophrenica
M. transversus abdominis
Aa. and Vv. epigastricae superiores
F. Netter M.D.

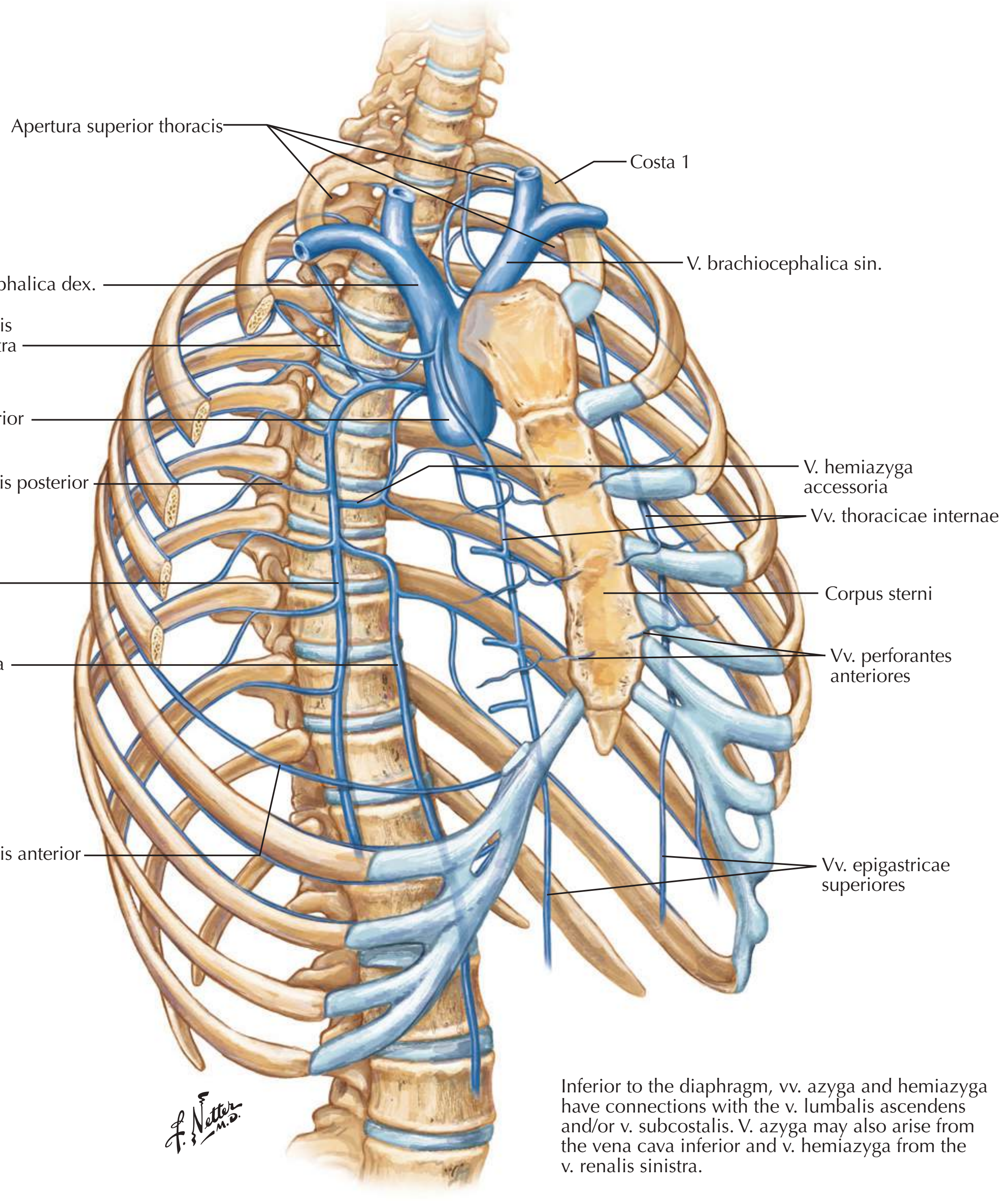

M. sternothyreoideus
Manubrium sterni
M. sternohyoideus
A. communis carotidis
V. jugularis interna
Truncus brachiocephalicus
M. scalenus anterior
A. and V. subclavia
A. and V. subclavia
Clavicula (cut)
V. brachiocephalica
V. brachiocephalica
N. phrenicus; A. and V. pericardiocophrenica
A. and V. thoracica interna
A. and V. thoracica interna
R. intercostalis anterior a. thoracicae internae; V. intercostalis anterior; N. intercostalis
R. intercostalis anterior a. thoracicae internae; V. intercostalis anterior; N. intercostalis
Mm. intercostales interni
Rr. perforantes a. and v. thoracicae internae; R. cutaneus anterior n. intercostalis
Mm. intercostales intimi
Rr. collaterales n., a. and v. intercostalis
M. transversus thoracis
Corpus sterni
Trigonum sternocostale
Diaphragma
Pars costalis diaphragmatis
A. and V. musculophrenica
M. transversus abdominis
Pars sternalis diaphragmatis
A. thoracica interna; Vv. thoracicae internae
Proc. xiphoideus
A. epigastrica superior; Vv. epigastricae superiores

Intercostal Nerves and Arteries

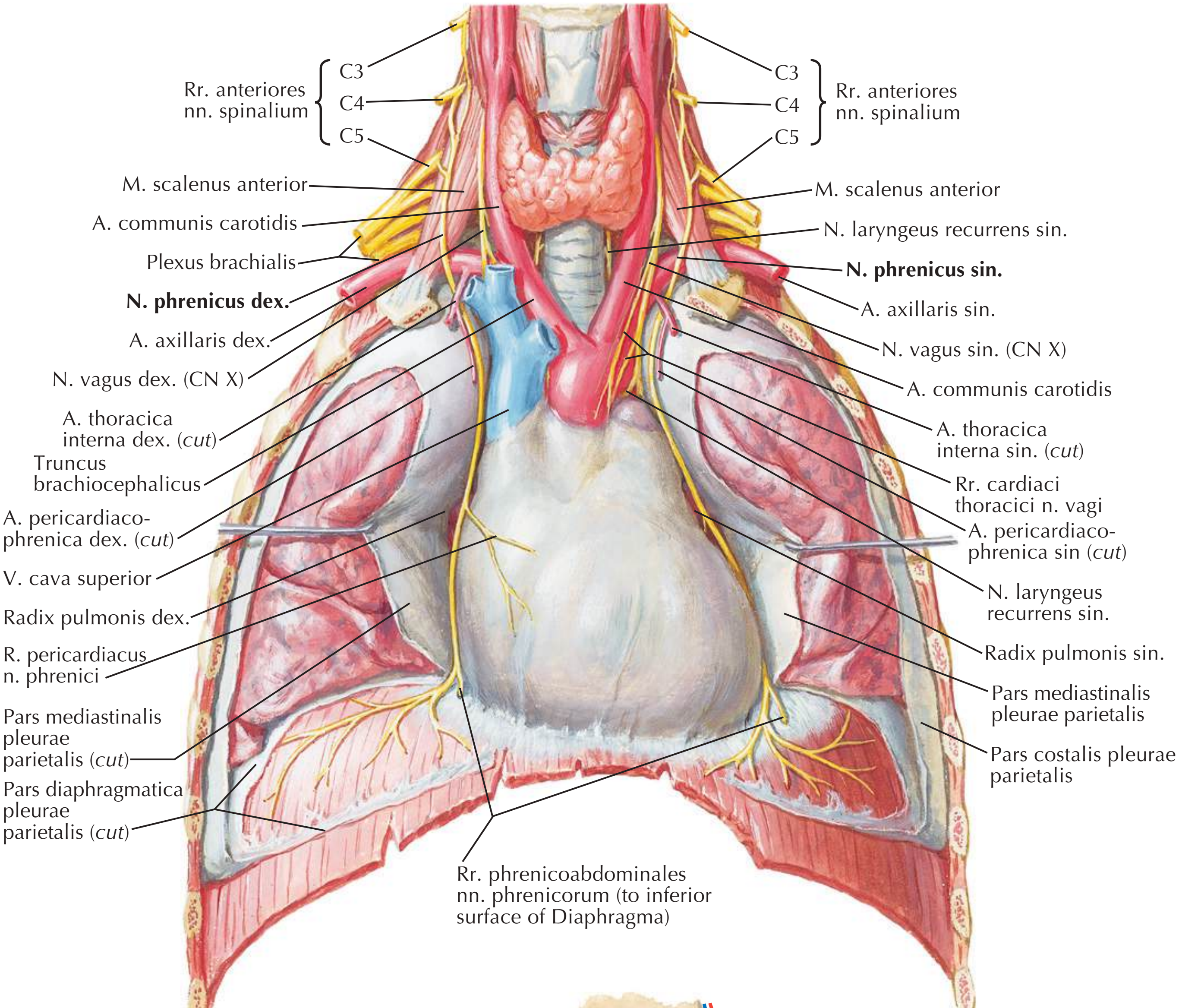
See also Plates 261, 269

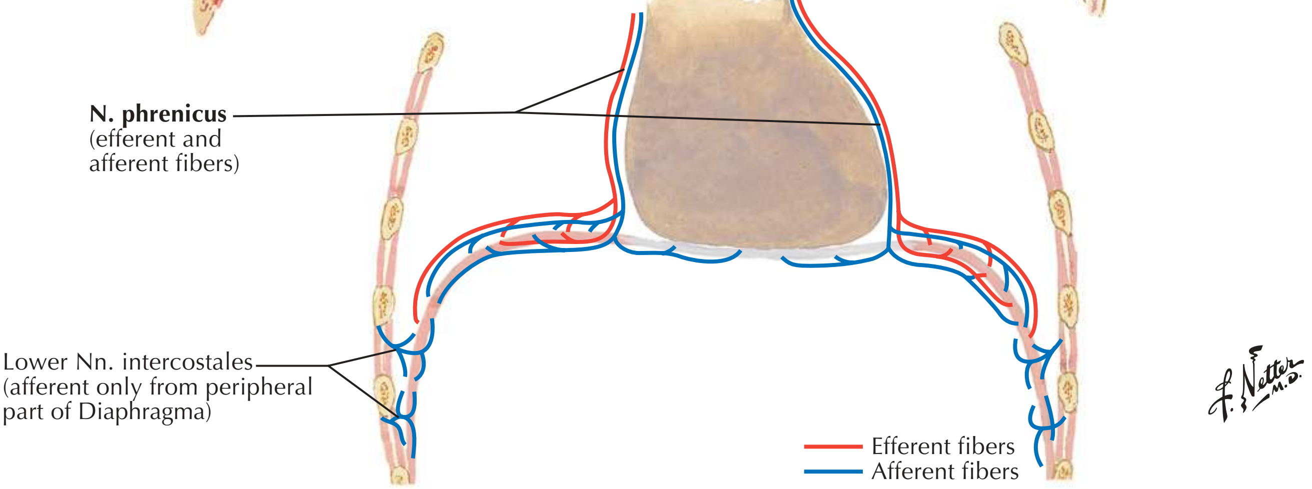

Radix anterior
Ganglion sensorium n. spinalis
R. medialis
R. lateralis
R. posterior n. thoracicus
N. intercostalis
(R. anterior n. thoracicus)
Membrana intercostalis interna
(deep to M. intercostalis externus)
M. serratus anterior
R. spinalis a. intercostalis posterioris
(R. radicularis or R. medullaris segmentalis)
R. dorsalis a. intercostalis posterioris
M. trapezius
M. rhomboideus major
Erector spinae
A. intercostalis posterior
Membrana intercostalis interna
Scapula
M. infraspinatus
M. subscapularis
M. teres minor
Rr. communicantes
griseus and albus
Truncus sympathicus;
Ganglion trunci sympathici
Aorta thoracica
Aa. intercostales
posteriores (*cut*)
M. intercostalis intimus
M. intercostalis internus
M. intercostalis externus
M. intercostalis intimus
M. intercostalis internus
M. intercostalis externus
Sternum
M. transversus thoracis
A. thoracica interna
R. cutaneus
lateralis n.
intercostalis
R. anterior
r. cutanei lateralis
n. intercostalis
M. obliquus externus abdominis
M. pectoralis major
R. cutaneus anterior n. intercostalis
R. perforans
a. thoracicae
internae
A. epigastrica superior
M. rectus abdominis
Rr. intercostales anteriores
a. thoracicae internae
Membrana intercostalis externa
R. cutaneus lateralis
a. intercostalis posterioris
M. obliquus
externus
abdominis
F. Netter M.D.

See also Plates 234, 241, 259


Apertura superior thoracis
Costa 1
V. brachiocephalica sin.
V. brachiocephalica dex.
V. intercostalis superior dextra
V. cava superior
V. intercostalis posterior
V. hemiazyga accessoria
Vv. thoracicae internae
V. azyga
Corpus sterni
V. hemiazyga
Vv. perforantes anteriores
V. intercostalis anterior
Vv. epigastricae superiores

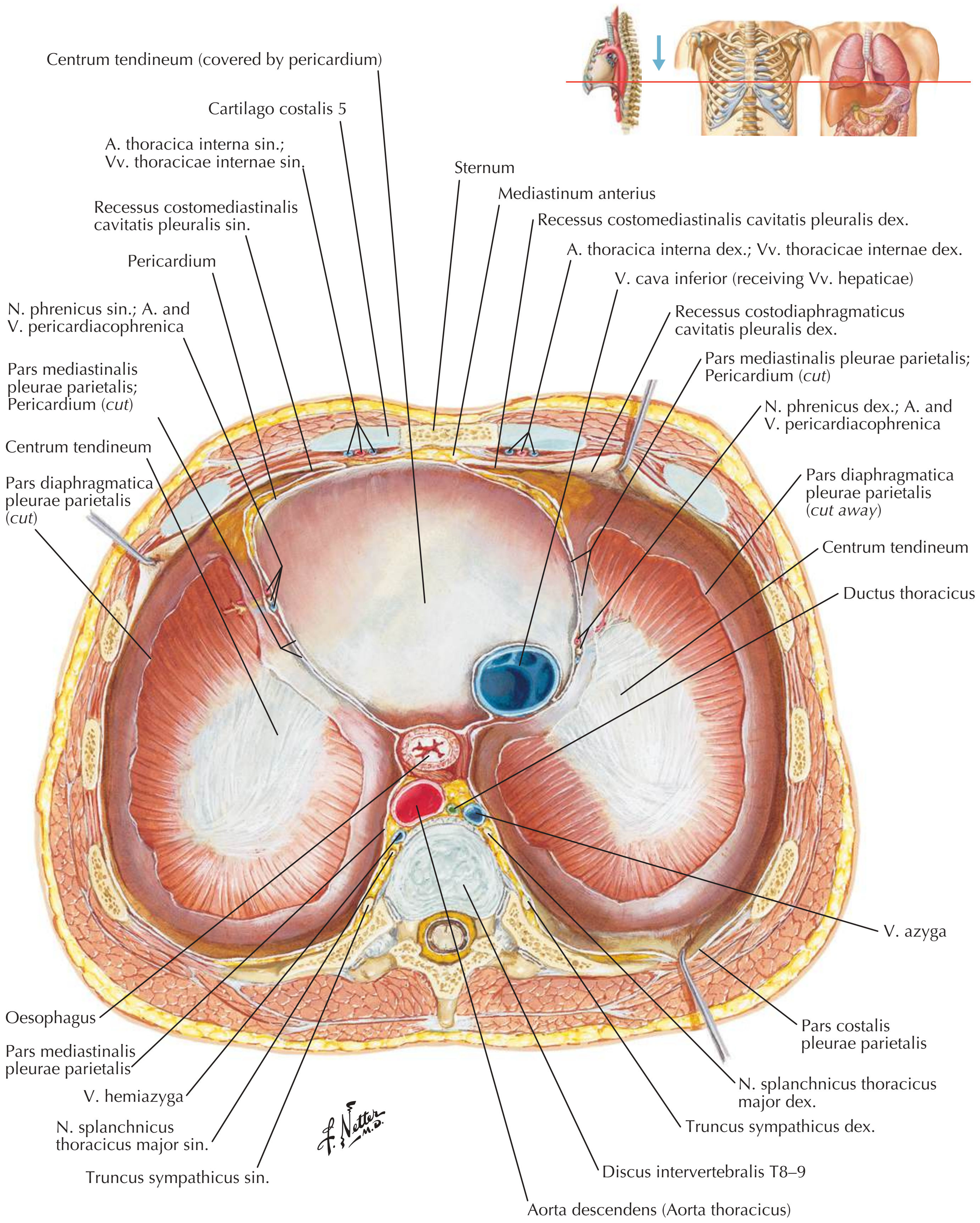
Inferior to the diaphragm, vv. azyga and hemiazyga have connections with the v. lumbalis ascendens and/or v. subcostalis. V. azyga may also arise from the vena cava inferior and v. hemiazyga from the v. renalis sinistra.


Rr. anteriores nn. spinalium
C3
C4
C5
M. scalenus anterior
A. communis carotidis
Plexus brachialis
N. phrenicus dex.
A. axillaris dex.
N. vagus dex. (CN X)
A. thoracica interna dex. (*cut*)
Truncus brachiocephalicus
A. pericardiacophrenica dex. (*cut*)
V. cava superior
Radix pulmonis dex.
R. pericardiacus n. phrenici
Pars mediastinalis pleurae parietalis (*cut*)
Pars diaphragmatica pleurae parietalis (*cut*)
Rr. phrenicoabdominales nn. phrenicorum (to inferior surface of Diaphragma)
C3
C4
C5
Rr. anteriores nn. spinalium
M. scalenus anterior
N. laryngeus recurrens sin.
N. phrenicus sin.
A. axillaris sin.
N. vagus sin. (CN X)
A. communis carotidis
A. thoracica interna sin. (*cut*)
Rr. cardiaci thoracici n. vagi
A. pericardiacophrenica sin (*cut*)
N. laryngeus recurrens sin.
Radix pulmonis sin.
Pars mediastinalis pleurae parietalis
Pars costalis pleurae parietalis

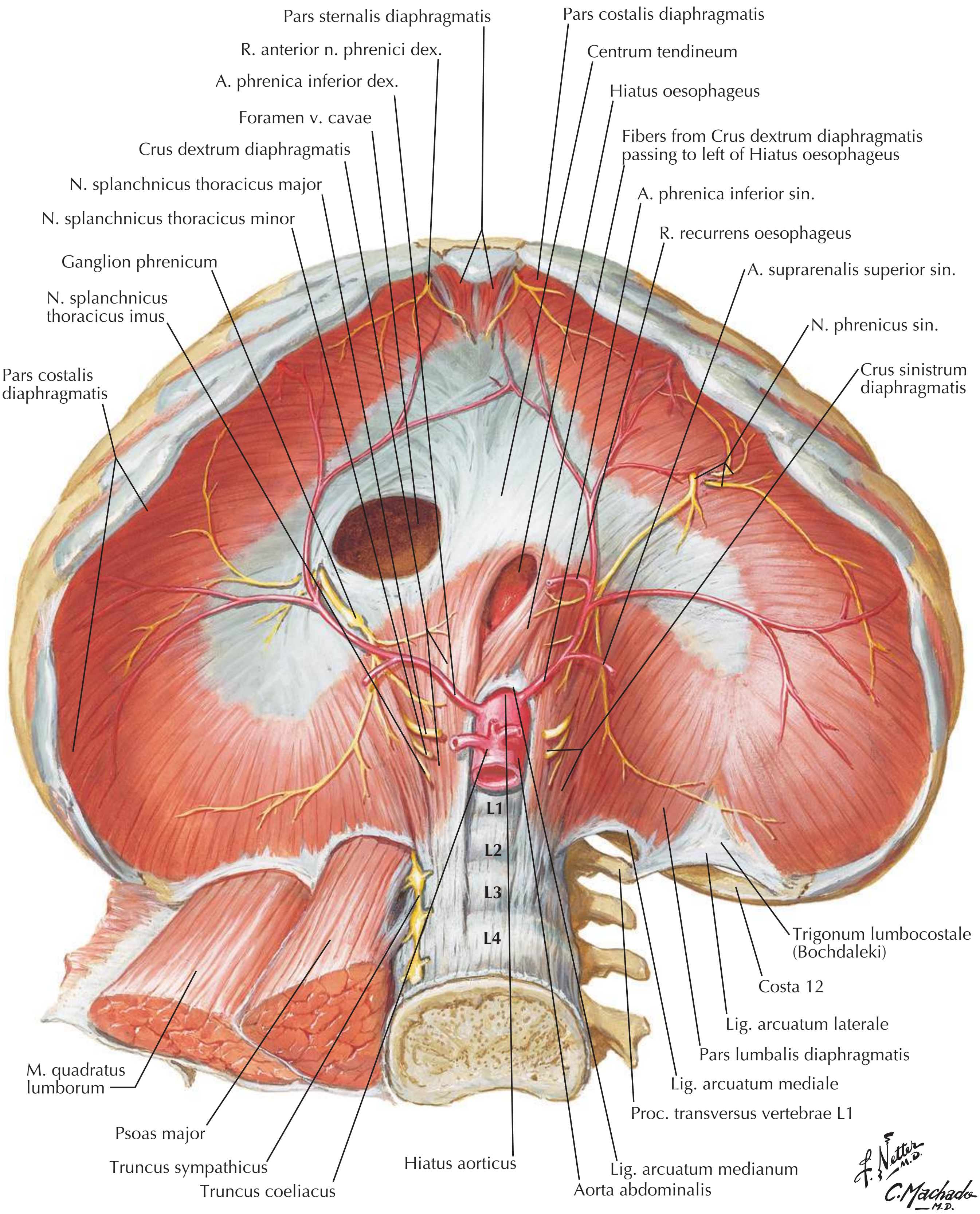

N. phrenicus (efferent and afferent fibers)
Lower Nn. intercostales (afferent only from peripheral part of Diaphragma)
F. Netter M.D.
Efferent fibers
Afferent fibers

Diaphragm: Thoracic Surface

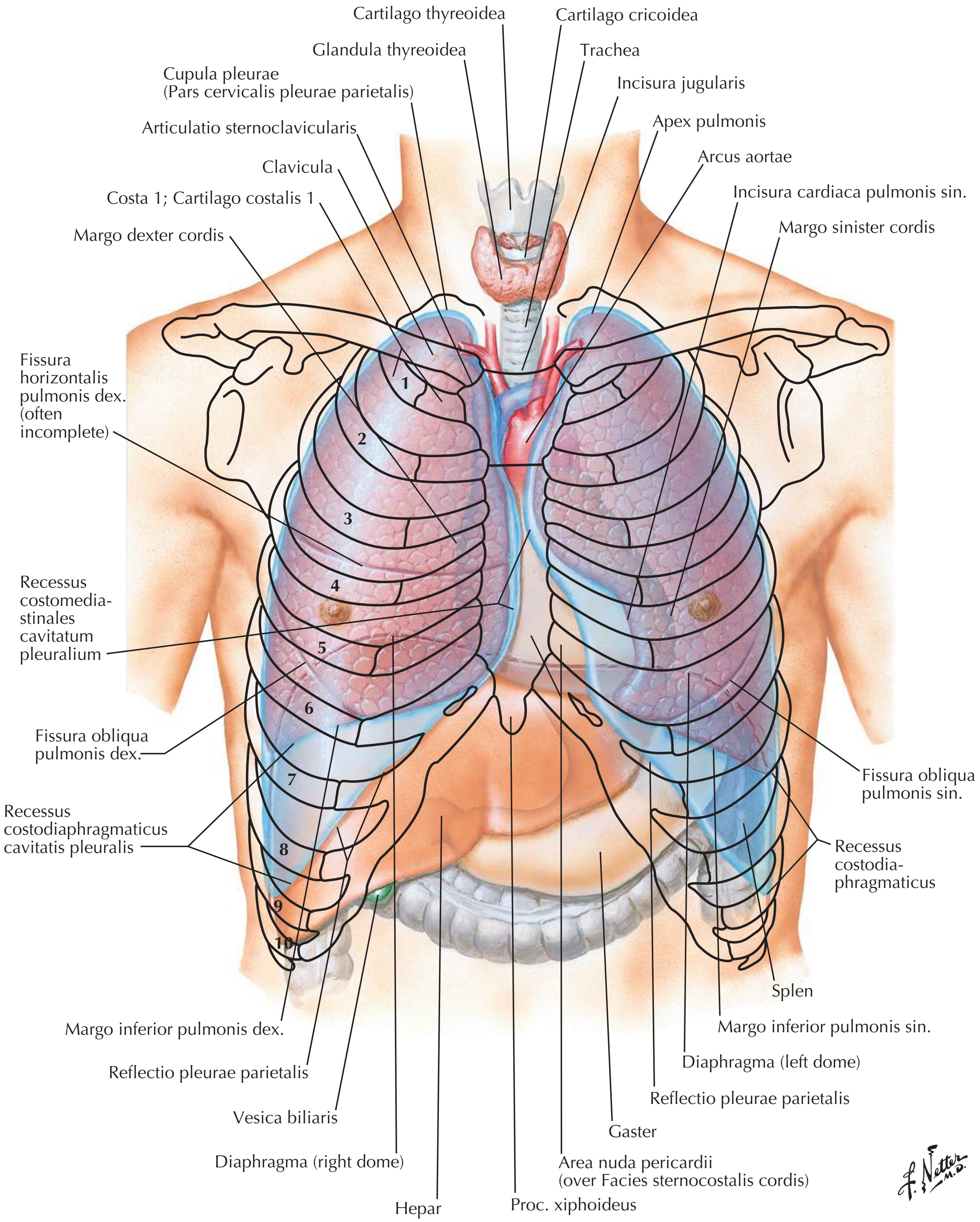
See also Plate 236

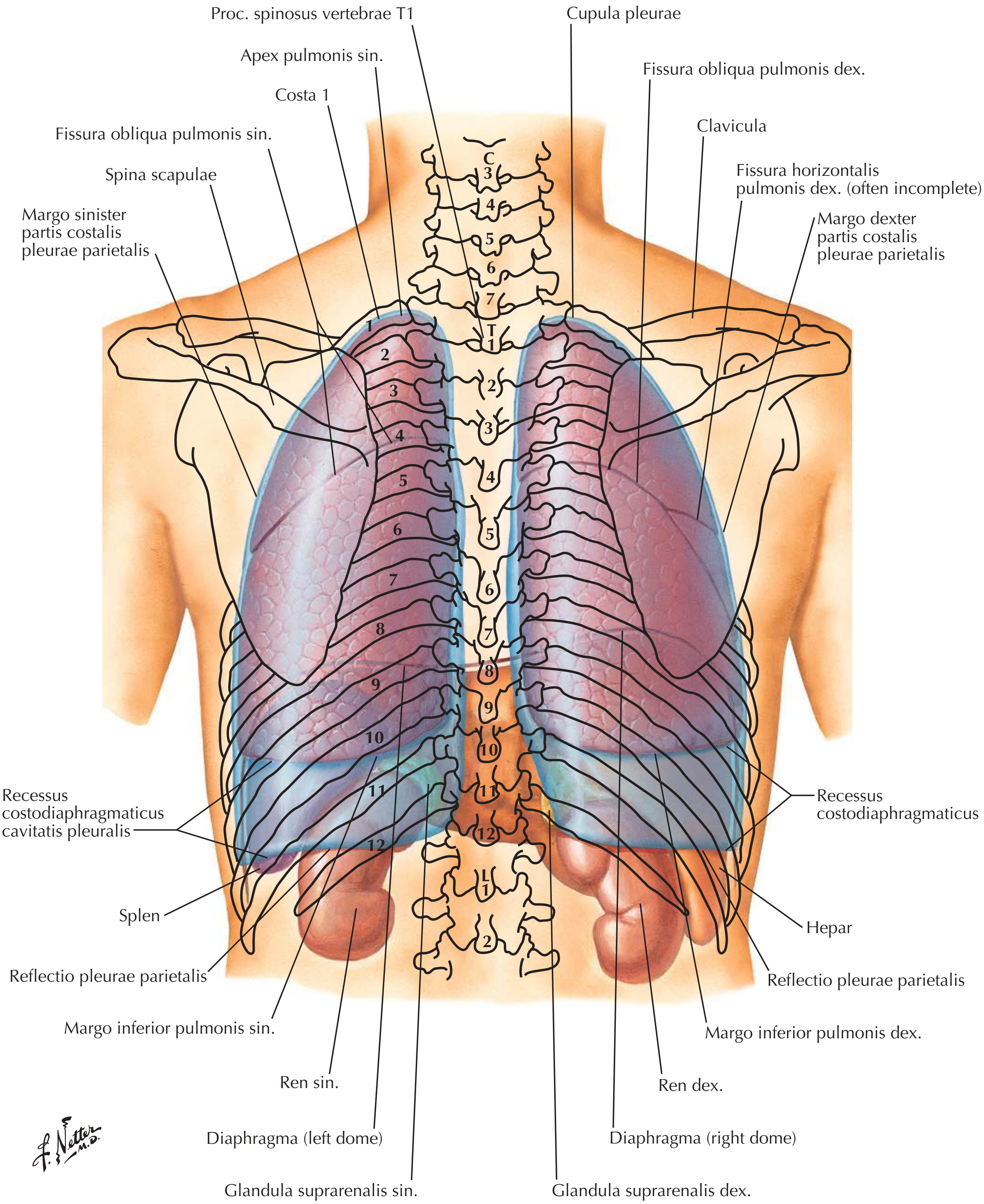

Centrum tendineum (covered by pericardium)
Cartilago costalis 5
A. thoracica interna sin.; Vv. thoracicae internae sin.
Recessus costomediastinalis cavitatis pleuralis sin.
Pericardium
N. phrenicus sin.; A. and V. pericardiacophrenica
Pars mediastinalis pleurae parietalis; Pericardium (*cut*)
Centrum tendineum
Pars diaphragmatica pleurae parietalis (*cut*)
Oesophagus
Pars mediastinalis pleurae parietalis
V. hemiazyga
N. splanchnicus thoracicus major sin.
Truncus sympathicus sin.
Sternum
Mediastinum anterius
Recessus costomediastinalis cavitatis pleuralis dex.
A. thoracica interna dex.; Vv. thoracicae internae dex.
V. cava inferior (receiving Vv. hepaticae)
Recessus costodiaphragmaticus cavitatis pleuralis dex.
Pars mediastinalis pleurae parietalis; Pericardium (*cut*)
N. phrenicus dex.; A. and V. pericardiacophrenica
Pars diaphragmatica pleurae parietalis (*cut away*)
Centrum tendineum
Ductus thoracicus
V. azyga
Pars costalis pleurae parietalis
N. splanchnicus thoracicus major dex.
Truncus sympathicus dex.
Discus intervertebralis T8–9
Aorta descendens (Aorta thoracicus)

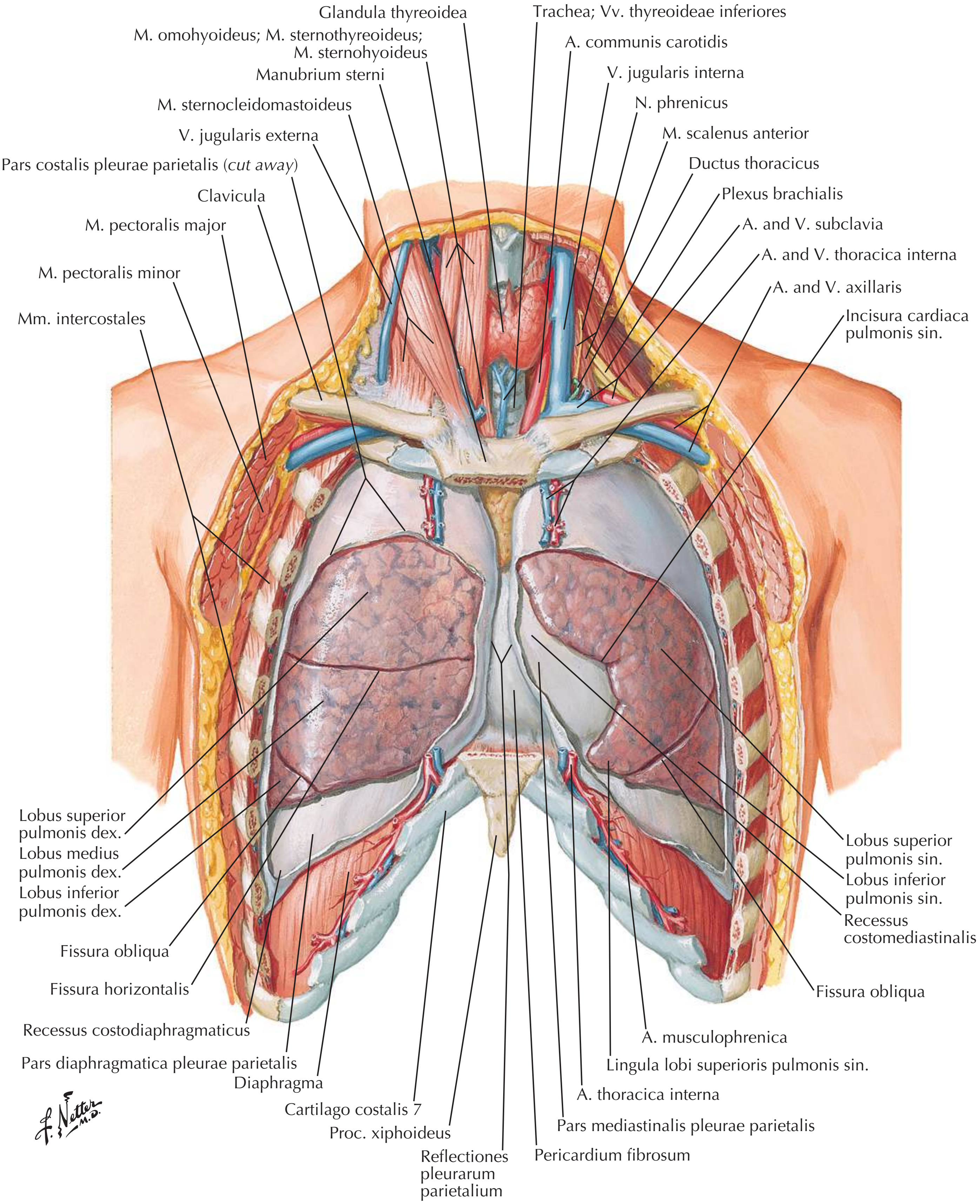
See also Plates 265, 266

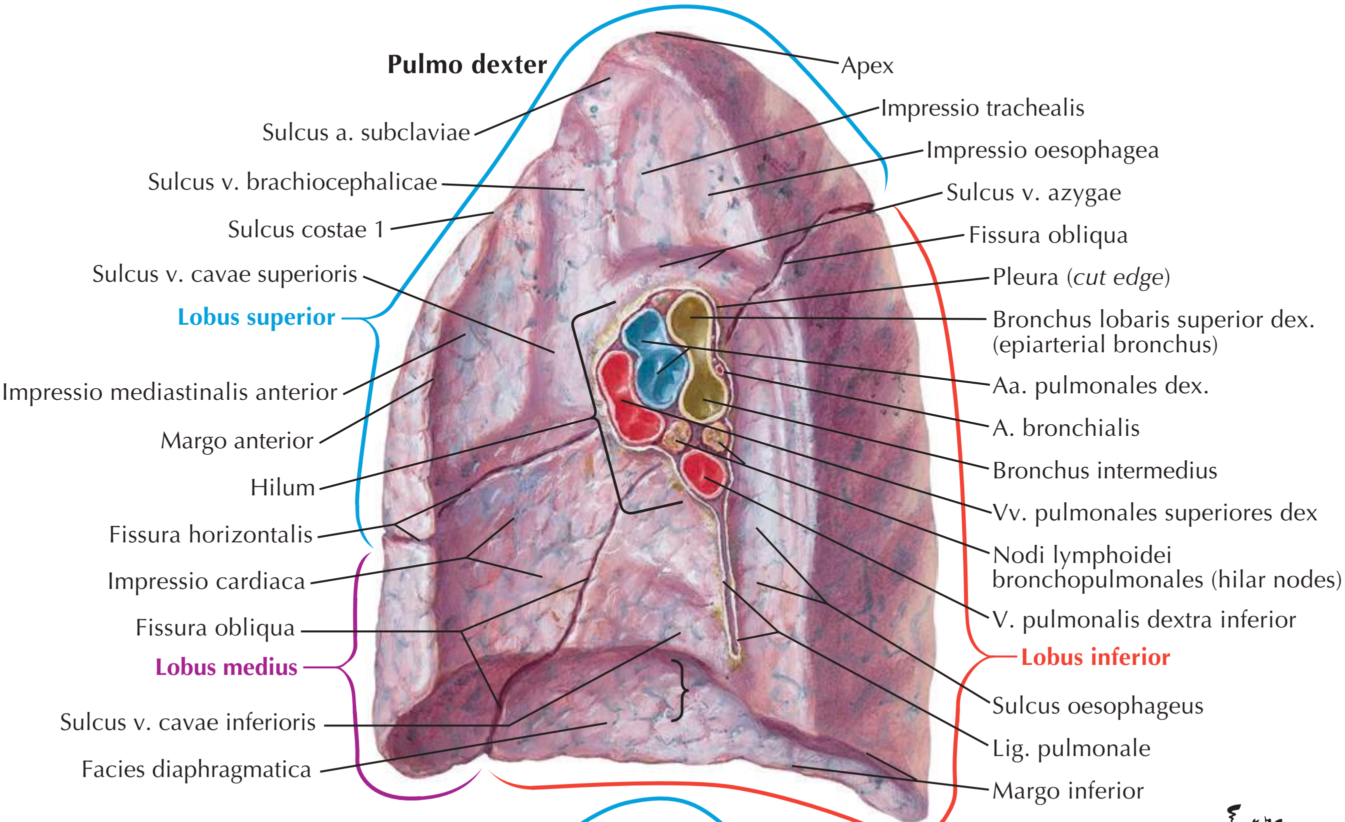

Pars sternalis diaphragmatis
R. anterior n. phrenici dex.
A. phrenica inferior dex.
Foramen v. cavae
Crus dextrum diaphragmatis
N. splanchnicus thoracicus major
N. splanchnicus thoracicus minor
Ganglion phrenicum
N. splanchnicus thoracicus imus
Pars costalis diaphragmatis
Pars costalis diaphragmatis
Centrum tendineum
Hiatus oesophageus
Fibers from Crus dextrum diaphragmatis passing to left of Hiatus oesophageus
A. phrenica inferior sin.
R. recurrens oesophageus
A. suprarenalis superior sin.
N. phrenicus sin.
Crus sinistrum diaphragmatis
L1
L2
L3
L4
Trigonum lumbocostale (Bochdaleki)
Costa 12
Lig. arcuatum laterale
Pars lumbalis diaphragmatis
Lig. arcuatum mediale
Proc. transversus vertebrae L1
Lig. arcuatum medianum
Aorta abdominalis
Hiatus aorticus
Truncus coeliacus
Truncus sympathicus
Psoas major
M. quadratus lumborum
F. Netter M.D.
C. Machado M.D.

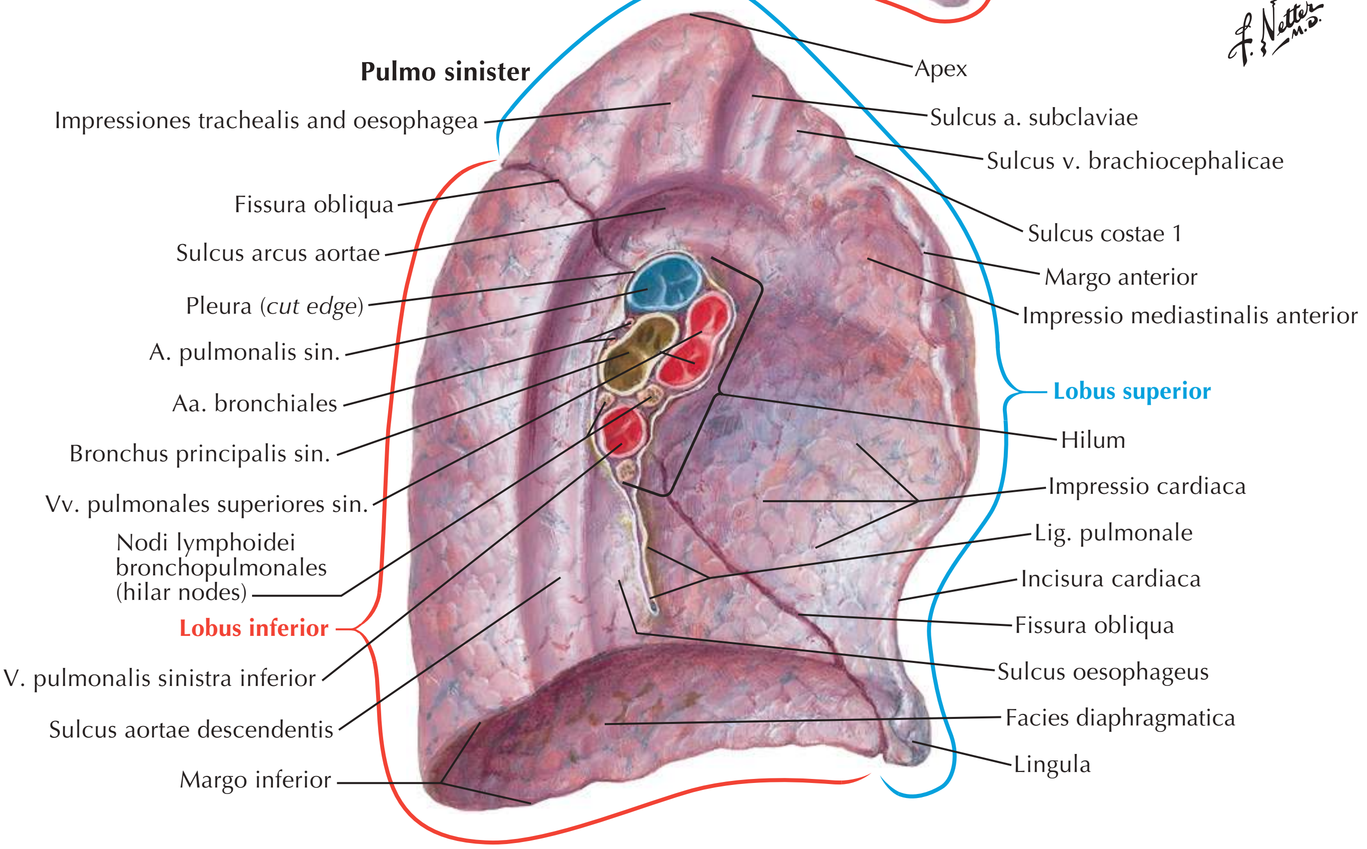
Topography of Lungs: Anterior View


Cartilago thyreoidea
Cartilago cricoidea
Glandula thyreoidea
Trachea
Cupula pleurae
(Pars cervicalis pleurae parietalis)
Incisura jugularis
Articulatio sternoclavicularis
Apex pulmonis
Clavicula
Arcus aortae
Costa 1; Cartilago costalis 1
Incisura cardiaca pulmonis sin.
Margo dexter cordis
Margo sinister cordis
Fissura horizontalis pulmonis dex. (often incomplete)
1
2
3
4
5
6
7
8
9
10
Recessus costomediastinales cavitatum pleuralium
Fissura obliqua pulmonis dex.
Recessus costodiaphragmaticus cavitatis pleuralis
Fissura obliqua pulmonis sin.
Recessus costodiaphragmaticus
Splen
Margo inferior pulmonis sin.
Margo inferior pulmonis dex.
Diaphragma (left dome)
Reflectio pleurae parietalis
Reflectio pleurae parietalis
Vesica biliaris
Gaster
Diaphragma (right dome)
Area nuda pericardii
(over Facies sternocostalis cordis)
Hepar
Proc. xiphoideus

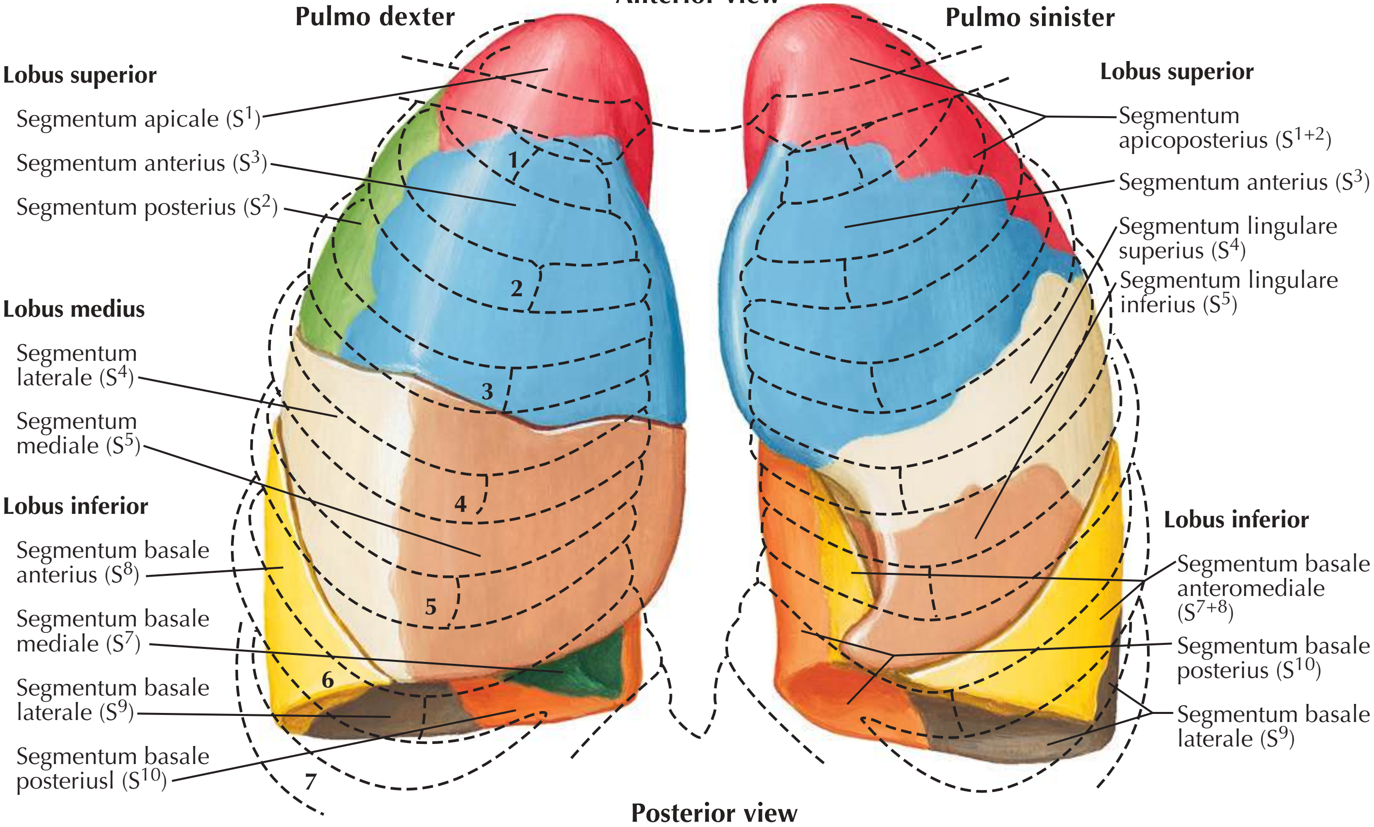

Proc. spinosus vertebrae T1
Cupula pleurae
Apex pulmonis sin.
Fissura obliqua pulmonis dex.
Costa 1
Clavicula
Fissura obliqua pulmonis sin.
Fissura horizontalis pulmonis dex. (often incomplete)
Spina scapulae
Margo sinister partis costalis pleurae parietalis
Margo dexter partis costalis pleurae parietalis
C
3
4
5
6
7
T
1
2
3
4
5
6
7
8
9
10
11
12
L
1
2
1
2
3
4
5
6
7
8
9
10
11
12
Recessus costodiaphragmaticus cavitatis pleuralis
Recessus costodiaphragmaticus
Splen
Hepar
Reflectio pleurae parietalis
Reflectio pleurae parietalis
Margo inferior pulmonis sin.
Margo inferior pulmonis dex.
Ren sin.
Ren dex.
F. Netter M.D.
Diaphragma (left dome)
Diaphragma (right dome)
Glandula suprarenalis sin.
Glandula suprarenalis dex.


Glandula thyreoidea
Trachea; Vv. thyreoideae inferiores
M. omohyoideus; M. sternothyreoideus;
M. sternohyoideus
A. communis carotidis
Manubrium sterni
V. jugularis interna
M. sternocleidomastoideus
N. phrenicus
V. jugularis externa
M. scalenus anterior
Pars costalis pleurae parietalis (cut away)
Ductus thoracicus
Clavicula
Plexus brachialis
M. pectoralis major
A. and V. subclavia
A. and V. thoracica interna
M. pectoralis minor
A. and V. axillaris
Mm. intercostales
Incisura cardiaca
pulmonis sin.
Lobus superior
pulmonis dex.
Lobus medius
pulmonis dex.
Lobus inferior
pulmonis dex.
Lobus superior
pulmonis sin.
Lobus inferior
pulmonis sin.
Recessus
costomediastinalis
Fissura obliqua
Fissura horizontalis
Fissura obliqua
Recessus costodiaphragmaticus
A. musculophrenica
Pars diaphragmatica pleurae parietalis
Lingula lobi superioris pulmonis sin.
Diaphragma
A. thoracica interna
Cartilago costalis 7
Pars mediastinalis pleurae parietalis
Proc. xiphoideus
Reflectiones
pleurarum
parietalium
Pericardium fibrosum
F. Netter M.D.

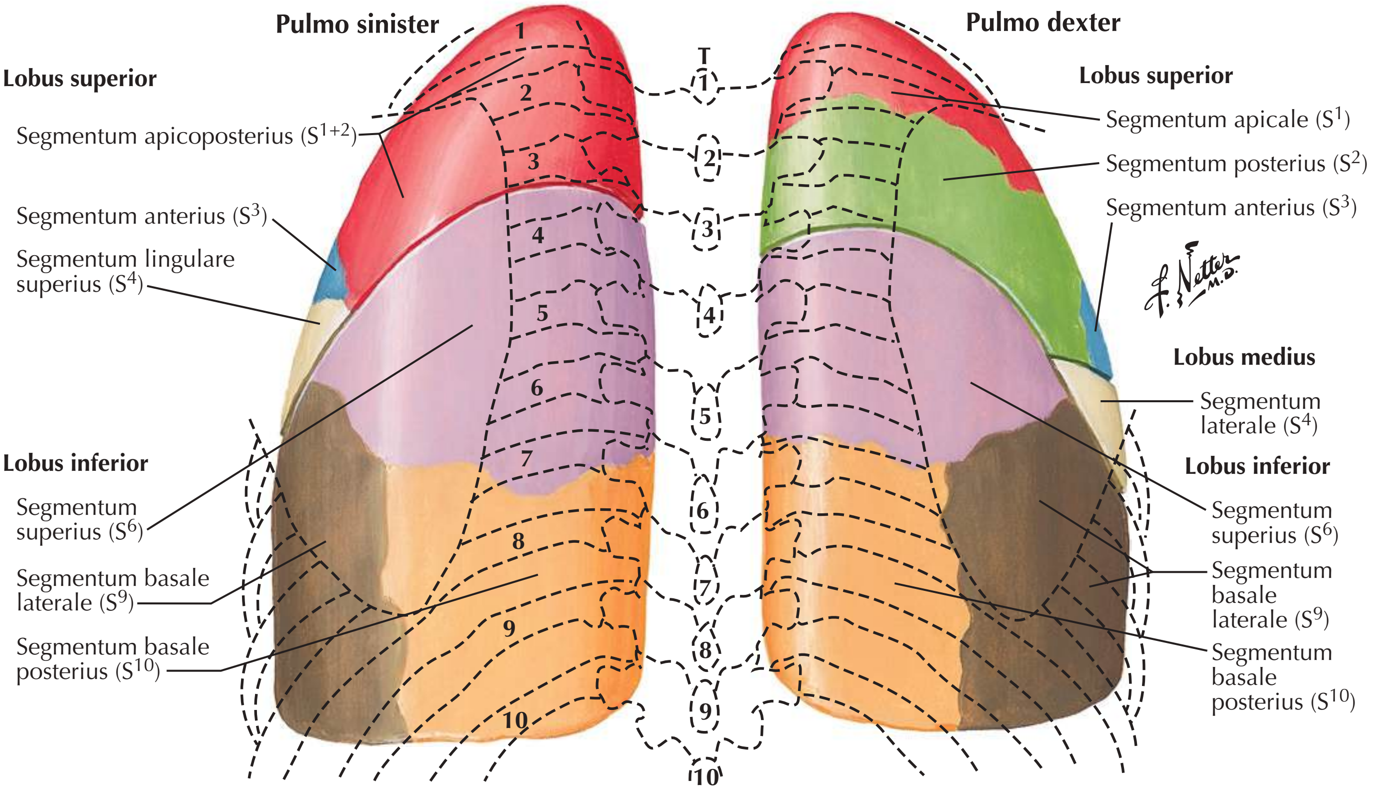

Pulmo dexter
Sulcus a. subclaviae
Sulcus v. brachiocephalicae
Sulcus costae 1
Sulcus v. cavae superioris
Lobus superior
Impressio mediastinalis anterior
Margo anterior
Hilum
Fissura horizontalis
Impressio cardiaca
Fissura obliqua
Lobus medius
Sulcus v. cavae inferioris
Facies diaphragmatica
Apex
Impressio trachealis
Impressio oesophagea
Sulcus v. azygae
Fissura obliqua
Pleura (*cut edge*)
Bronchus lobaris superior dex. (epiarterial bronchus)
Aa. pulmonales dex.
A. bronchialis
Bronchus intermedius
Vv. pulmonales superiores dex
Nodi lymphoidei bronchopulmonales (hilar nodes)
V. pulmonalis dextra inferior
Lobus inferior
Sulcus oesophageus
Lig. pulmonale
Margo inferior
F. Netter M.D.


Pulmo sinister
Impressiones trachealis and oesophagea
Fissura obliqua
Sulcus arcus aortae
Pleura (*cut edge*)
A. pulmonalis sin.
Aa. bronchiales
Bronchus principalis sin.
Vv. pulmonales superiores sin.
Nodi lymphoidei bronchopulmonales (hilar nodes)
Lobus inferior
V. pulmonalis sinistra inferior
Sulcus aortae descendentis
Margo inferior
Apex
Sulcus a. subclaviae
Sulcus v. brachiocephalicae
Sulcus costae 1
Margo anterior
Impressio mediastinalis anterior
Lobus superior
Hilum
Impressio cardiaca
Lig. pulmonale
Incisura cardiaca
Fissura obliqua
Sulcus oesophageus
Facies diaphragmatica
Lingula

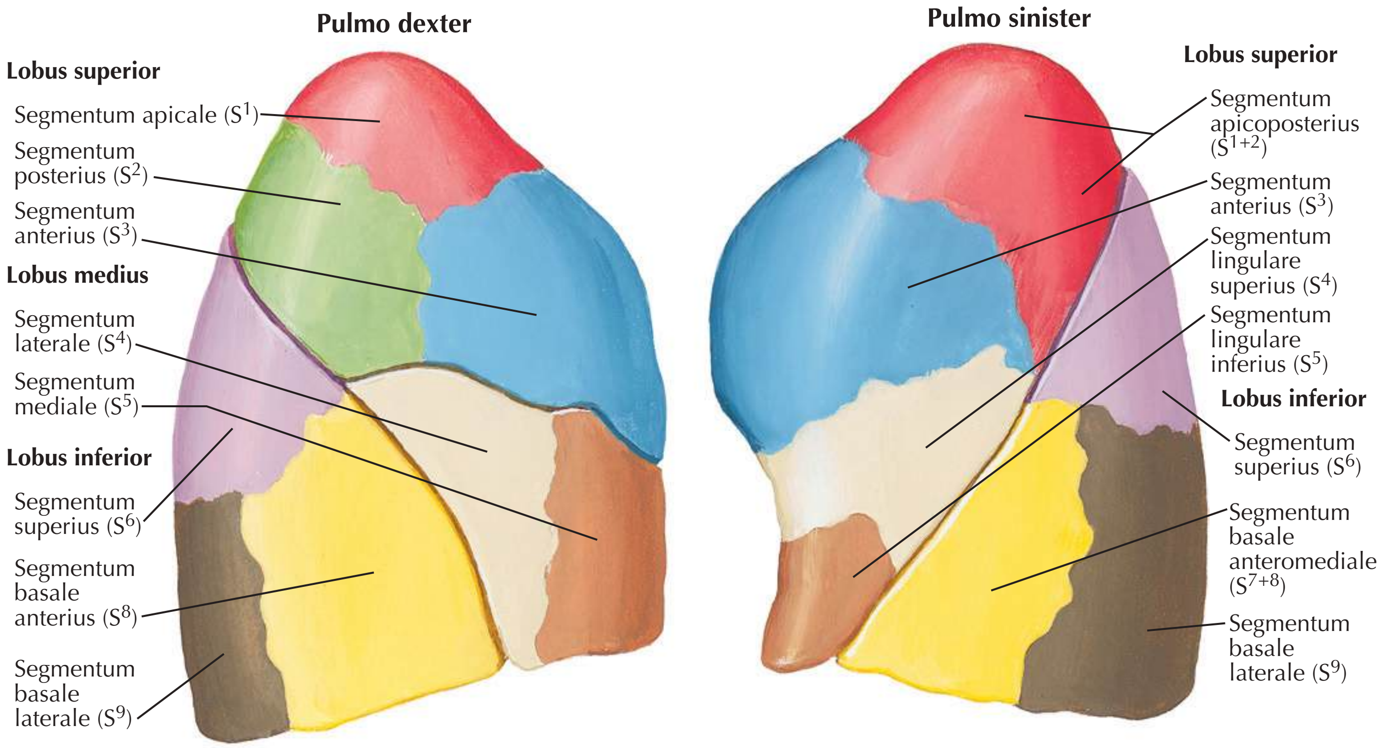
Anterior view


Pulmo dexter
Lobus superior
Segmentum apicale (S¹)
Segmentum anterius (S³)
Segmentum posterius (S²)
Lobus medius
Segmentum laterale (S⁴)
Segmentum mediale (S⁵)
Lobus inferior
Segmentum basale anterius (S⁸)
Segmentum basale mediale (S⁷)
Segmentum basale laterale (S⁹)
Segmentum basale posteriusl (S¹⁰)
1
2
3
4
5
6
7
Pulmo sinister
Lobus superior
Segmentum apicoposterius (S¹⁺²)
Segmentum anterius (S³)
Segmentum lingulare superius (S⁴)
Segmentum lingulare inferius (S⁵)
Lobus inferior
Segmentum basale anteromediale (S⁷⁺⁸)
Segmentum basale posterius (S¹⁰)
Segmentum basale laterale (S⁹)

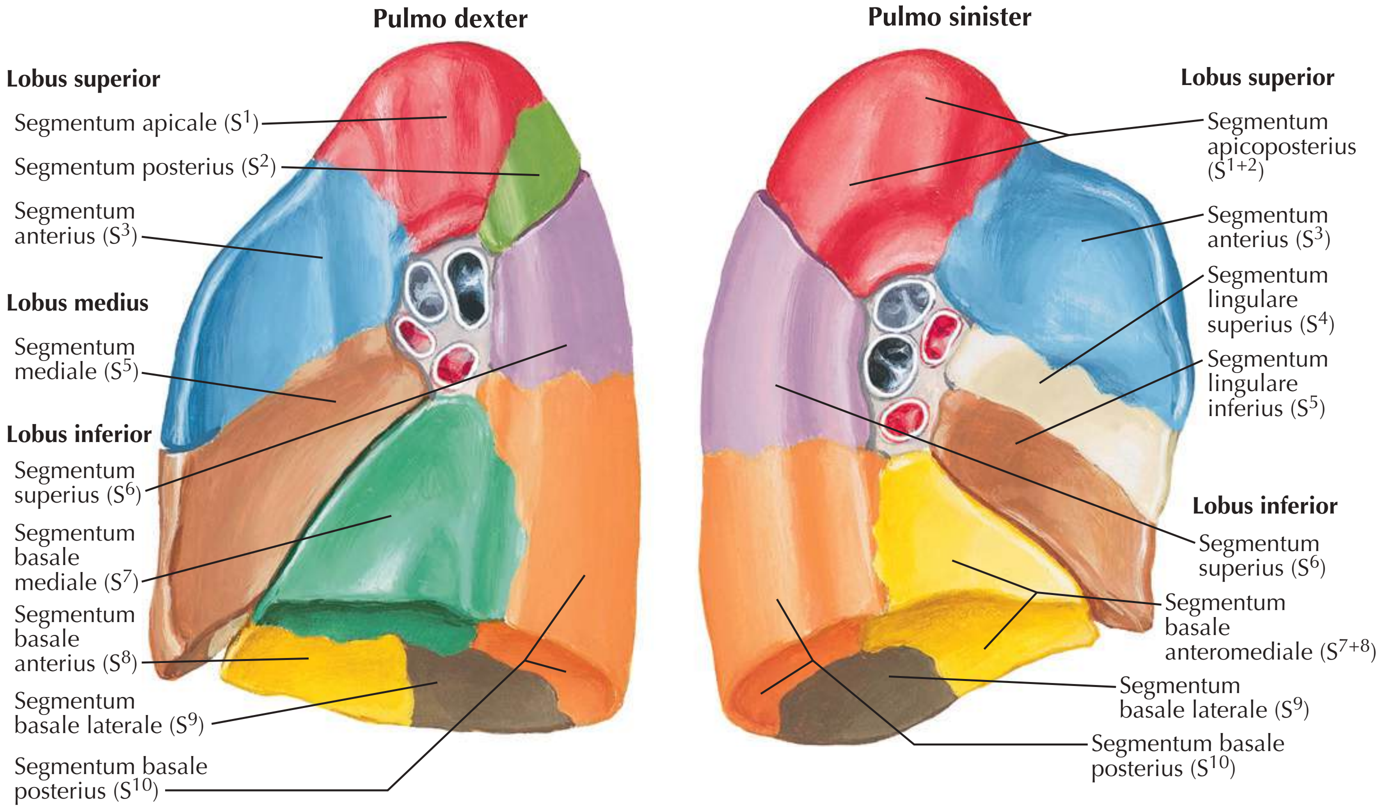
Posterior view


Pulmo sinister
Lobus superior
Segmentum apicoposterius (S¹⁺²)
Segmentum anterius (S³)
Segmentum lingulare superius (S⁴)
Lobus inferior
Segmentum superius (S⁶)
Segmentum basale laterale (S⁹)
Segmentum basale posterius (S¹⁰)
1
2
3
4
5
6
7
8
9
10
T 1
2
3
4
5
6
7
8
9
10
Pulmo dexter
Lobus superior
Segmentum apicale (S¹)
Segmentum posterius (S²)
Segmentum anterius (S³)
Lobus medius
Segmentum laterale (S⁴)
Lobus inferior
Segmentum superius (S⁶)
Segmentum basale laterale (S⁹)
Segmentum basale posterius (S¹⁰)

Lateral views

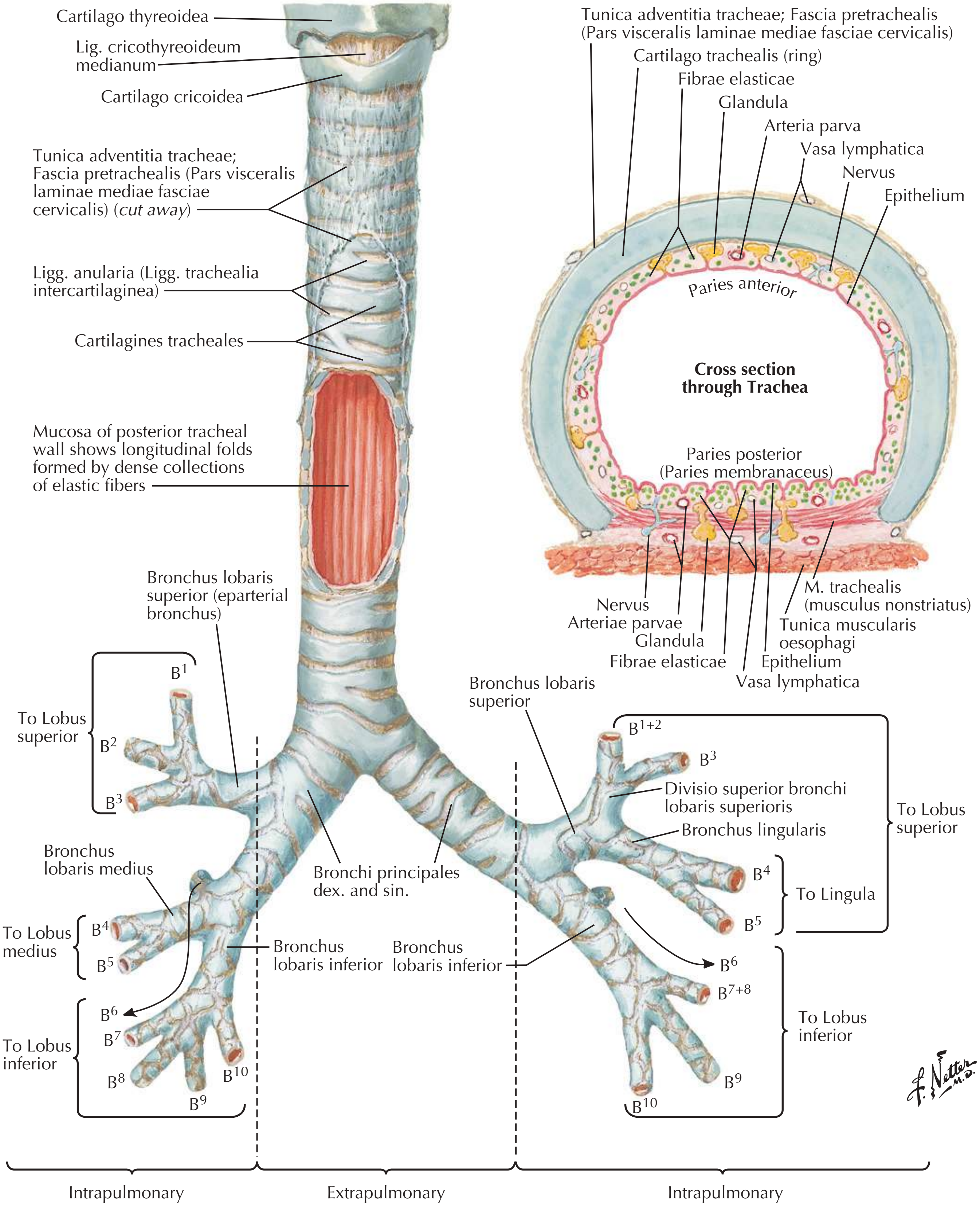

Pulmo dexter
Lobus superior
Segmentum apicale (S^1)
Segmentum posterius (S^2)
Segmentum anterius (S^3)
Lobus medius
Segmentum laterale (S^4)
Segmentum mediale (S^5)
Lobus inferior
Segmentum superius (S^6)
Segmentum basale anterius (S^8)
Segmentum basale laterale (S^9)
Pulmo sinister
Lobus superior
Segmentum apicoposterius (S^{1+2})
Segmentum anterius (S^3)
Segmentum lingulare superius (S^4)
Segmentum lingulare inferius (S^5)
Lobus inferior
Segmentum superius (S^6)
Segmentum basale anteromediale (S^{7+8})
Segmentum basale laterale (S^9)

Medial views

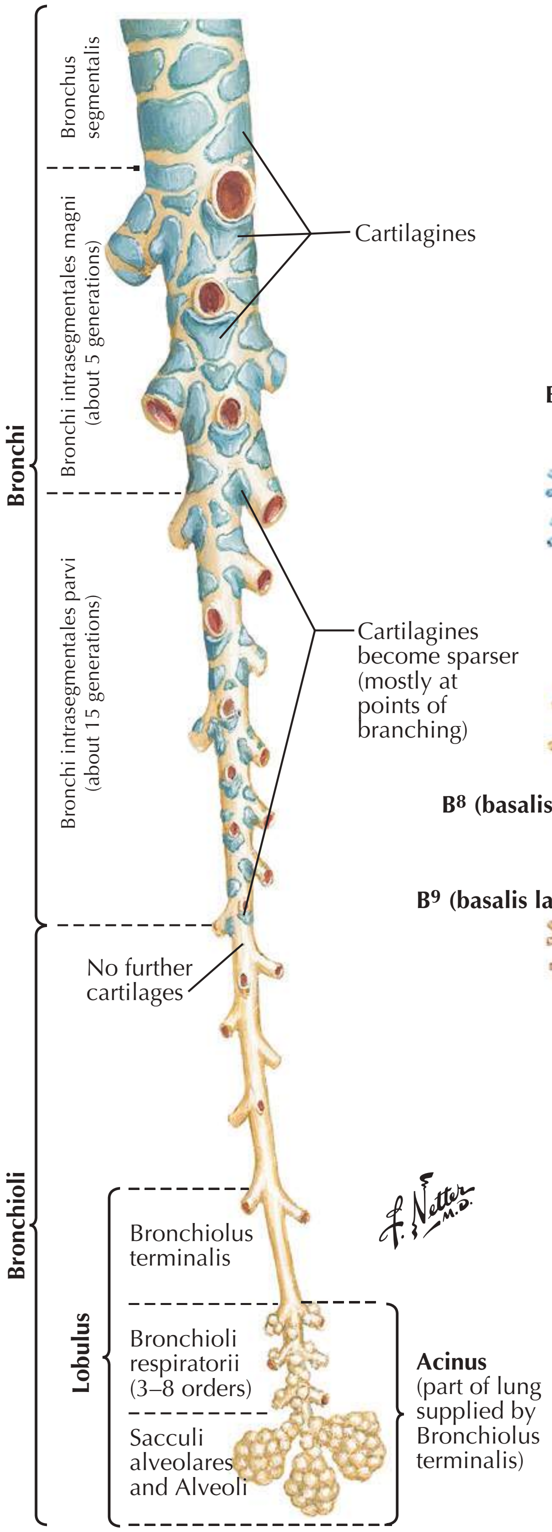

Pulmo dexter
Lobus superior
Segmentum apicale (S^1)
Segmentum posterius (S^2)
Segmentum anterius (S^3)
Lobus medius
Segmentum mediale (S^5)
Lobus inferior
Segmentum superius (S^6)
Segmentum basale mediale (S^7)
Segmentum basale anterius (S^8)
Segmentum basale laterale (S^9)
Segmentum basale posterius (S^{10})
Pulmo sinister
Lobus superior
Segmentum apicoposterius (S^{1+2})
Segmentum anterius (S^3)
Segmentum lingulare superius (S^4)
Segmentum lingulare inferius (S^5)
Lobus inferior
Segmentum superius (S^6)
Segmentum basale anteromediale (S^{7+8})
Segmentum basale laterale (S^9)
Segmentum basale posterius (S^{10})

Trachea and Major Bronchi

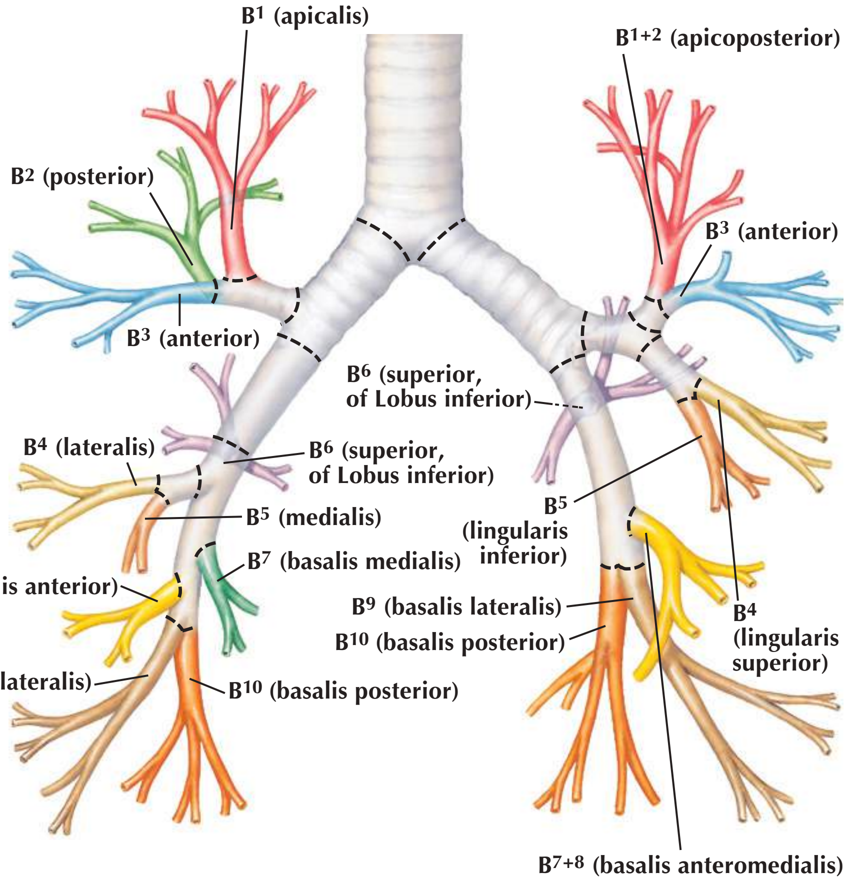
See also Plates 81, 211, 214



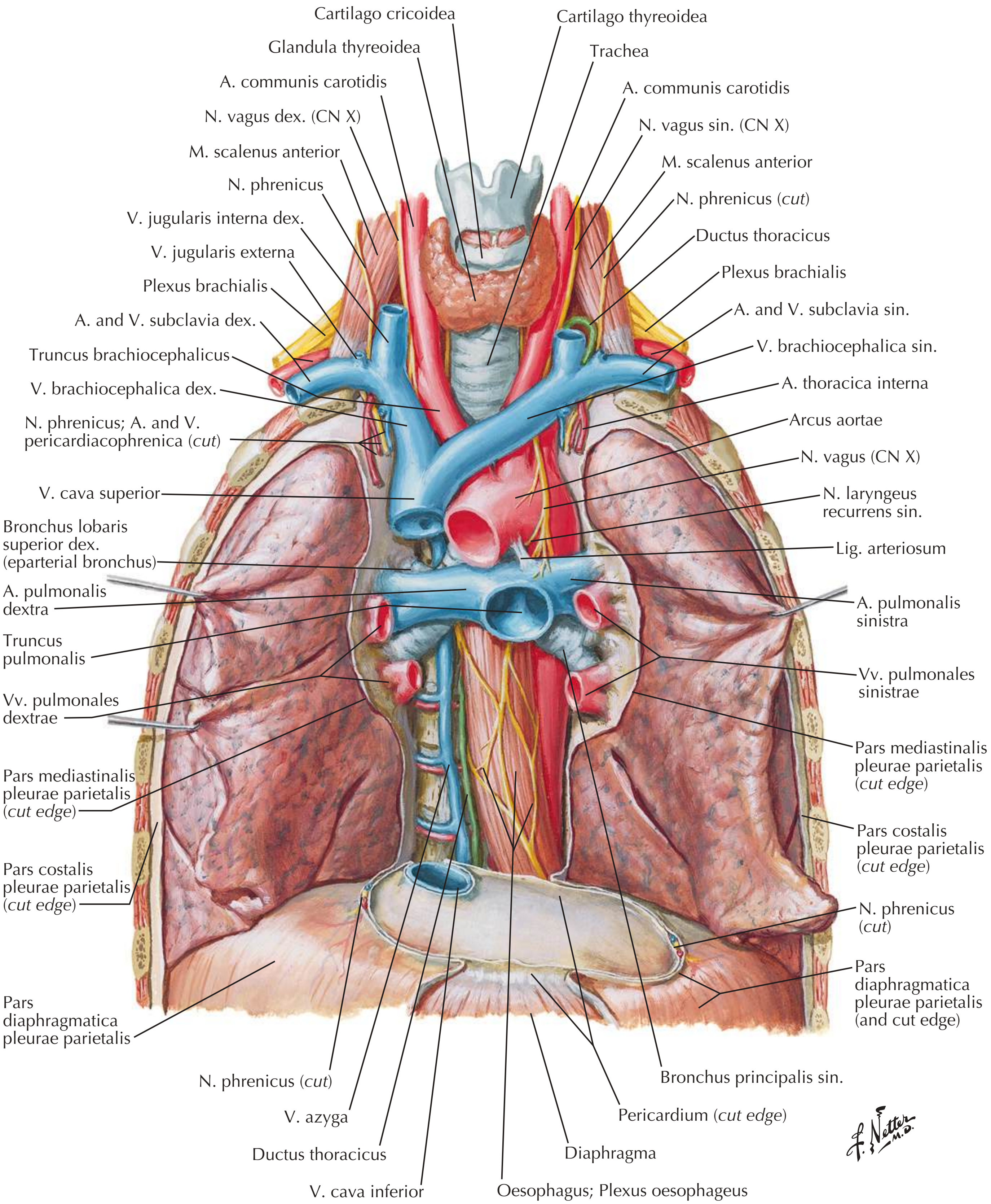
Cartilago thyreoidea
Lig. cricothyreoideum medianum
Cartilago cricoidea
Tunica adventitia tracheae; Fascia pretrachealis (Pars visceralis laminae mediae fasciae cervicalis) (*cut away*)
Ligg. anularia (Ligg. trachealia intercartilaginea)
Cartilagines tracheales
Mucosa of posterior tracheal wall shows longitudinal folds formed by dense collections of elastic fibers
Bronchus lobaris superior (eparterial bronchus)
To Lobus superior
B^{1}
B^{2}
B^{3}
Bronchus lobaris medius
To Lobus medius
B^{4}
B^{5}
To Lobus inferior
B^{6}
B^{7}
B^{8}
B^{9}
B^{10}
Bronchi principales dex. and sin.
Bronchus lobaris inferior
Bronchus lobaris inferior
Bronchus lobaris superior
B^{1+2}
B^{3}
Divisio superior bronchi lobaris superioris
Bronchus lingularis
To Lobus superior
B^{4}
B^{5}
To Lingula
B^{6}
B^{7+8}
To Lobus inferior
B^{9}
B^{10}
Intrapulmonary
Extrapulmonary
Intrapulmonary
Tunica adventitia tracheae; Fascia pretrachealis (Pars visceralis laminae mediae fasciae cervicalis)
Cartilago trachealis (ring)
Fibrae elasticae
Glandula
Arteria parva
Vasa lymphatica
Nervus
Epithelium
Paries anterior
Cross section through Trachea
Paries posterior (Paries membranaceus)
Nervus
Arteriae parvae
Glandula
Fibrae elasticae
Vasa lymphatica
Epithelium
M. trachealis (musculus nonstriatus)
Tunica muscularis oesophagi

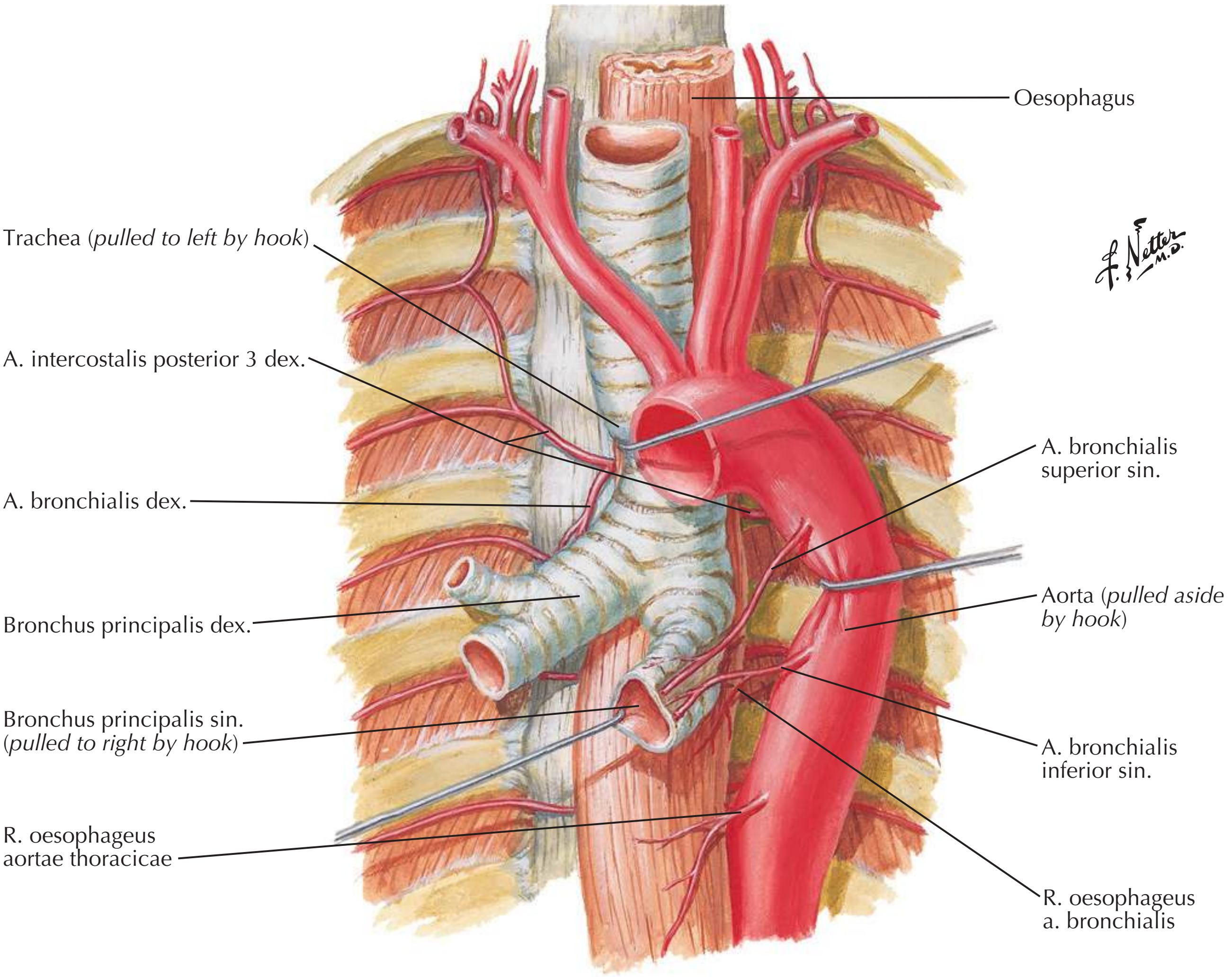

Bronchi
Bronchus segmentalis
Bronchi intrasegmentales magni (about 5 generations)
Bronchi intrasegmentales parvi (about 15 generations)
Cartilagines
Cartilagines become sparser (mostly at points of branching)
No further cartilages
Bronchioli
Bronchiolus terminalis
Lobulus
Bronchioli respiratorii (3–8 orders)
Sacculi alveolares and Alveoli
Acinus (part of lung supplied by Bronchiolus terminalis)
F. Netter M.D.

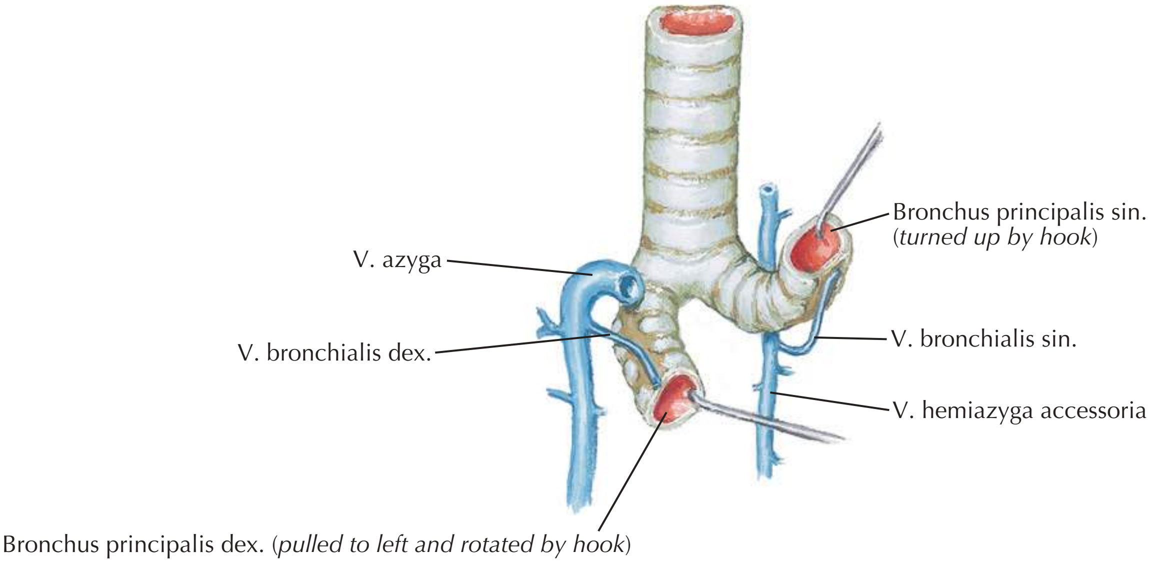
Subdivisions of intrapulmonary airways


B^1 (apicalis)
B^{1+2} (apicoposterior)
B^2 (posterior)
B^3 (anterior)
B^3 (anterior)
B^6 (superior, of Lobus inferior)
B^4 (lateralis)
B^6 (superior, of Lobus inferior)
B^5 (medialis)
B^5 (lingularis inferior)
B^7 (basalis medialis)
B^8 (basalis anterior)
B^9 (basalis lateralis)
B^{10} (basalis posterior)
B^4 (lingularis superior)
B^9 (basalis lateralis)
B^{10} (basalis posterior)
B^{7+8} (basalis anteromedialis)

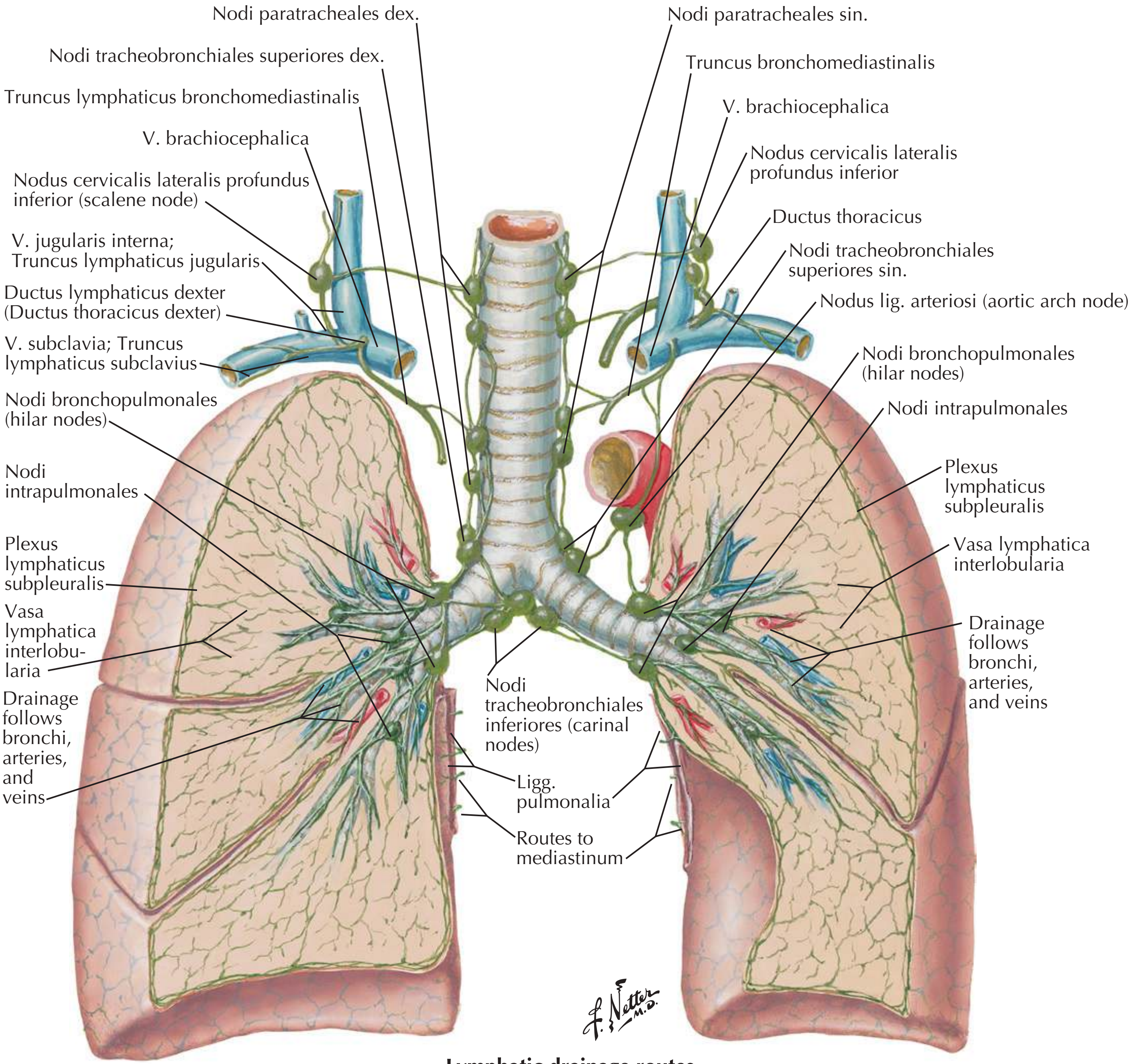
Nomenclature in common usage for bronchopulmonary segments (Plates 206 and 207) is that of Jackson and Huber, and segmental bronchi are named accordingly. Bronchial subdivisions as far as the 5th or 6th generations also are shown but not labelled. Bronchi segmentales (B) are numbered from 1 to 10 in each lung, corresponding to the pulmonary segments. In the left lung, B^1 and B^2 are combined as are B^7 and B^8. Variations of the standard bronchial pattern shown here are common, especially in peripheral airways.


Cartilago cricoidea
Cartilago thyreoidea
Glandula thyreoidea
Trachea
A. communis carotidis
A. communis carotidis
N. vagus dex. (CN X)
N. vagus sin. (CN X)
M. scalenus anterior
M. scalenus anterior
N. phrenicus
N. phrenicus (cut)
V. jugularis interna dex.
Ductus thoracicus
V. jugularis externa
Plexus brachialis
Plexus brachialis
A. and V. subclavia sin.
A. and V. subclavia dex.
V. brachiocephalica sin.
Truncus brachiocephalicus
A. thoracica interna
V. brachiocephalica dex.
Arcus aortae
N. phrenicus; A. and V. pericardiacophrenica (cut)
N. vagus (CN X)
V. cava superior
N. laryngeus recurrens sin.
Bronchus lobaris superior dex. (eparterial bronchus)
Lig. arteriosum
A. pulmonalis dextra
A. pulmonalis sinistra
Truncus pulmonalis
Vv. pulmonales sinistrae
Vv. pulmonales dextrae
Pars mediastinalis pleurae parietalis (cut edge)
Pars mediastinalis pleurae parietalis (cut edge)
Pars costalis pleurae parietalis (cut edge)
Pars costalis pleurae parietalis (cut edge)
N. phrenicus (cut)
Pars diaphragmatica pleurae parietalis (and cut edge)
Pars diaphragmatica pleurae parietalis
Bronchus principalis sin.
N. phrenicus (cut)
V. azyga
Pericardium (cut edge)
Ductus thoracicus
Diaphragma
V. cava inferior
Oesophagus; Plexus oesophageus


Oesophagus
Trachea (*pulled to left by hook*)
A. intercostalis posterior 3 dex.
A. bronchialis dex.
Bronchus principalis dex.
Bronchus principalis sin. (*pulled to right by hook*)
R. oesophageus aortae thoracicae
A. bronchialis superior sin.
Aorta (*pulled aside by hook*)
A. bronchialis inferior sin.
R. oesophageus a. bronchialis
F. Netter M.D.


V. azyga
V. bronchialis dex.
Bronchus principalis sin. (*turned up by hook*)
V. bronchialis sin.
V. hemiazyga accessoria
Bronchus principalis dex. (*pulled to left and rotated by hook*)

See also Plates 85, 242

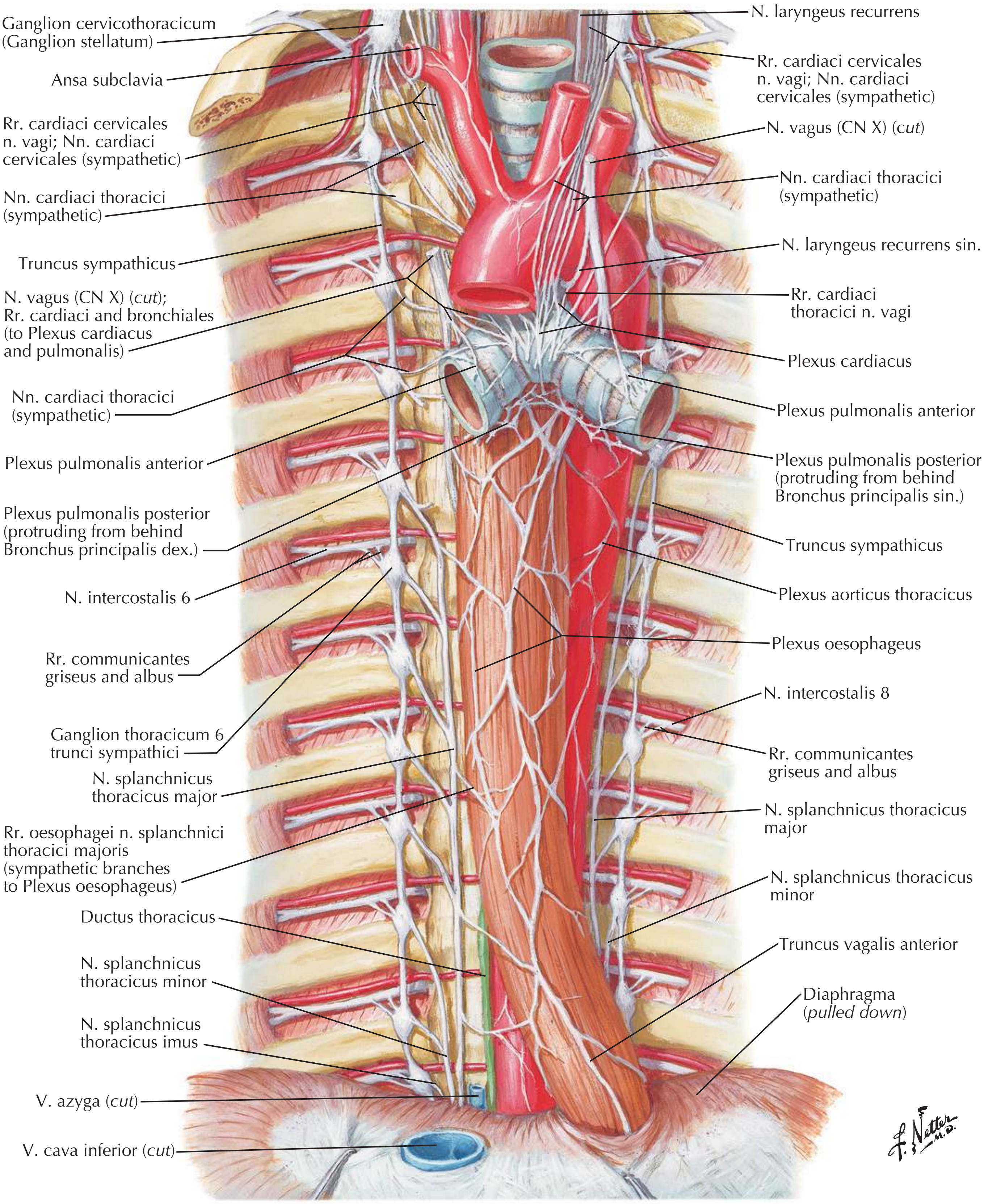

Nodi paratracheales dex.
Nodi tracheobronchiales superiores dex.
Truncus lymphaticus bronchomediastinalis
V. brachiocephalica
Nodus cervicalis lateralis profundus inferior (scalene node)
V. jugularis interna; Truncus lymphaticus jugularis
Ductus lymphaticus dexter (Ductus thoracicus dexter)
V. subclavia; Truncus lymphaticus subclavius
Nodi bronchopulmonales (hilar nodes)
Nodi intrapulmonales
Plexus lymphaticus subpleuralis
Vasa lymphatica interlobularia
Drainage follows bronchi, arteries, and veins
Nodi paratracheales sin.
Truncus bronchomediastinalis
V. brachiocephalica
Nodus cervicalis lateralis profundus inferior
Ductus thoracicus
Nodi tracheobronchiales superiores sin.
Nodus lig. arteriosi (aortic arch node)
Nodi bronchopulmonales (hilar nodes)
Nodi intrapulmonales
Plexus lymphaticus subpleuralis
Vasa lymphatica interlobularia
Drainage follows bronchi, arteries, and veins
Nodi tracheobronchiales inferiores (carinal nodes)
Ligg. pulmonalia
Routes to mediastinum

Lymphatic drainage routes

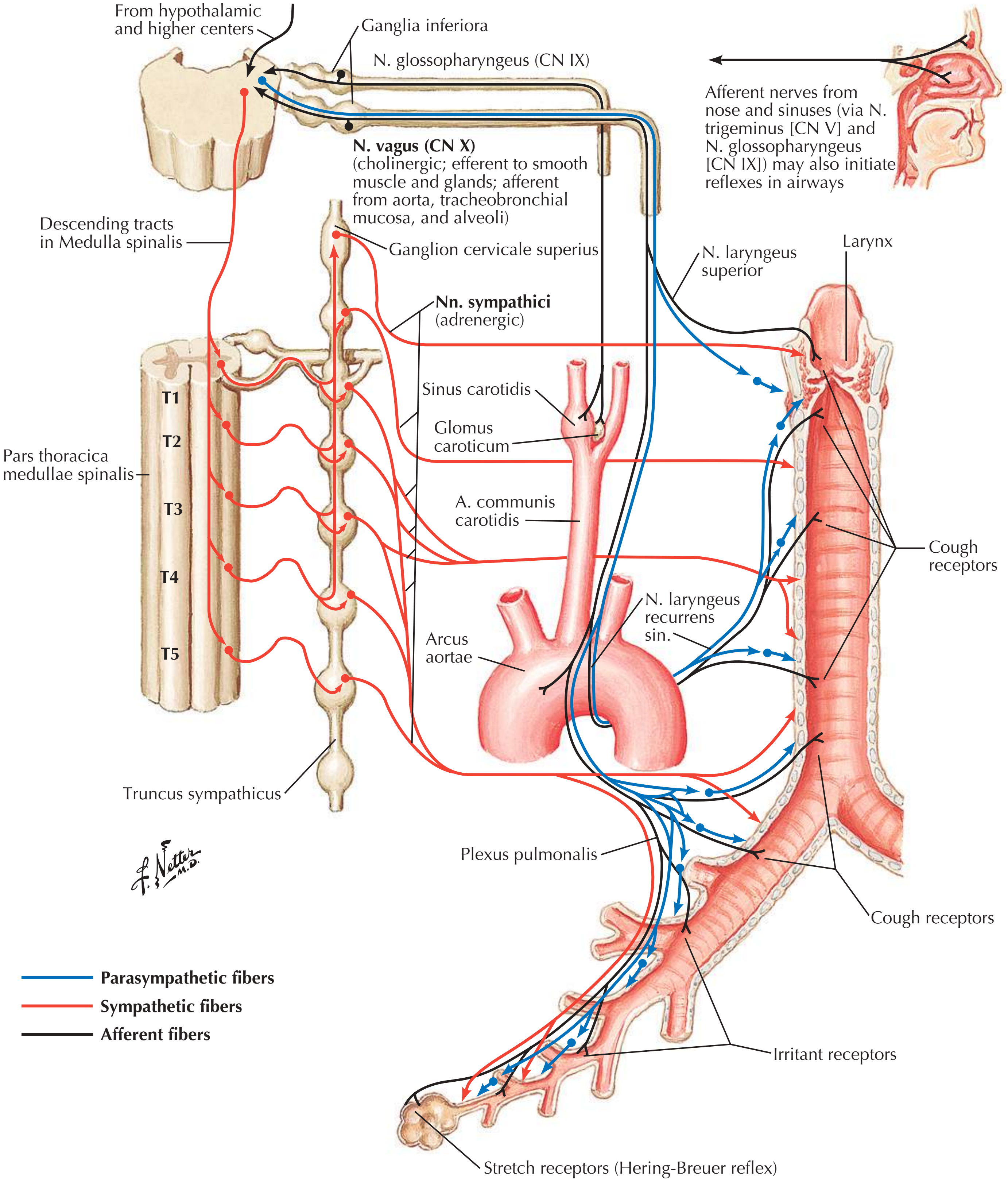
Right lung: All lobes drain to pulmonary and bronchopulmonary (hilar) nodes, then to inferior tracheobronchial (carinal) nodes, right superior tracheobronchial nodes, and right paratracheal nodes on the way to the brachiocephalic vein via the bronchomediastinal lymphatic trunk and/or inferior deep cervical (scalene) nodes.

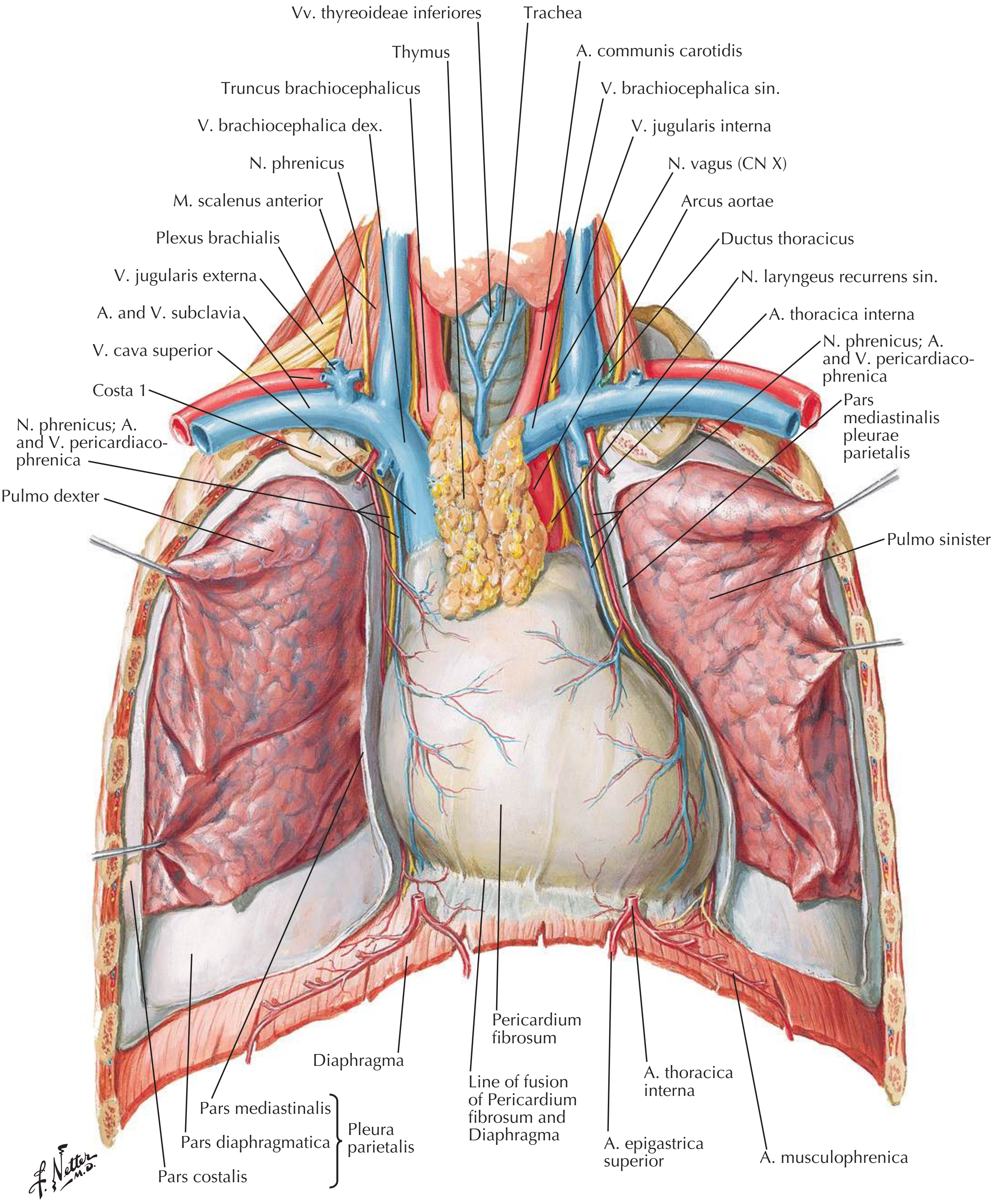
Left lung: The superior lobe drains to pulmonary and bronchoplumonary (hilar) nodes, inferior tracheobronchial (carinal) nodes, left superior tracheobronchial nodes, left paratracheal nodes and/or (aortic arch) node of ligamentum arteriosum, then to the brachiocephalic vein via the left bronchomediastinal trunk and thoracic duct.

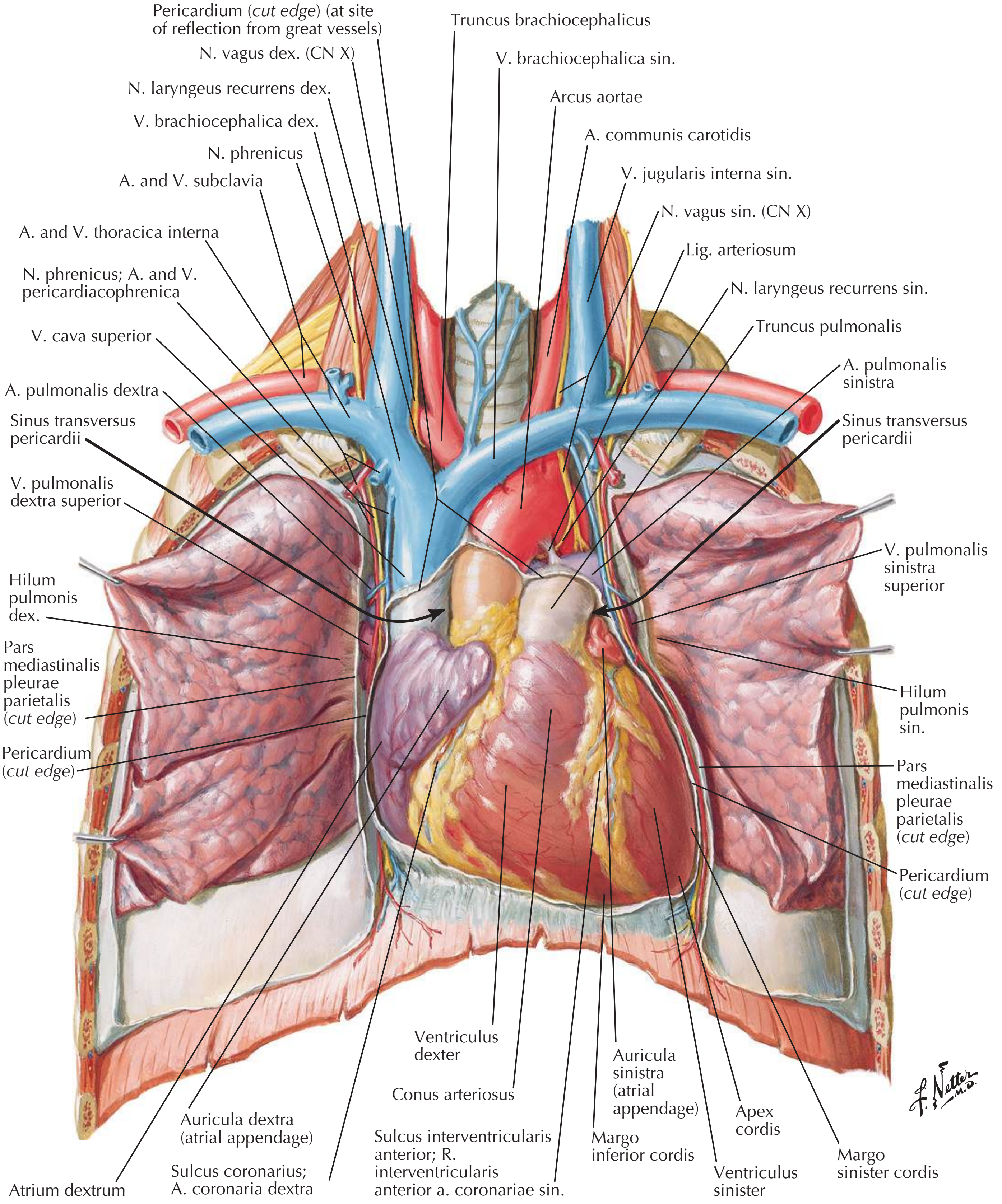
The left inferior lobe also drains to the pulmonary and bronchopulmonary (hilar) nodes and to inferior tracheobronchial (carinal) nodes, but then mostly to right superior tracheobronchial nodes, where it follows the same route as lymph from the right lung.


Ganglion cervicothoracicum (Ganglion stellatum)
Ansa subclavia
Rr. cardiaci cervicales n. vagi; Nn. cardiaci cervicales (sympathetic)
Nn. cardiaci thoracici (sympathetic)
Truncus sympathicus
N. vagus (CN X) (*cut*); Rr. cardiaci and bronchiales (to Plexus cardiacus and pulmonalis)
Nn. cardiaci thoracici (sympathetic)
Plexus pulmonalis anterior
Plexus pulmonalis posterior (protruding from behind Bronchus principalis dex.)
N. intercostalis 6
Rr. communicantes griseus and albus
Ganglion thoracicum 6 trunci sympathici
N. splanchnicus thoracicus major
Rr. oesophagei n. splanchnici thoracici majoris (sympathetic branches to Plexus oesophageus)
Ductus thoracicus
N. splanchnicus thoracicus minor
N. splanchnicus thoracicus imus
V. azyga (*cut*)
V. cava inferior (*cut*)
N. laryngeus recurrens
Rr. cardiaci cervicales n. vagi; Nn. cardiaci cervicales (sympathetic)
N. vagus (CN X) (*cut*)
Nn. cardiaci thoracici (sympathetic)
N. laryngeus recurrens sin.
Rr. cardiaci thoracici n. vagi
Plexus cardiacus
Plexus pulmonalis anterior
Plexus pulmonalis posterior (protruding from behind Bronchus principalis sin.)
Truncus sympathicus
Plexus aorticus thoracicus
Plexus oesophageus
N. intercostalis 8
Rr. communicantes griseus and albus
N. splanchnicus thoracicus major
N. splanchnicus thoracicus minor
Truncus vagalis anterior
Diaphragma (*pulled down*)
F. Netter M.D.

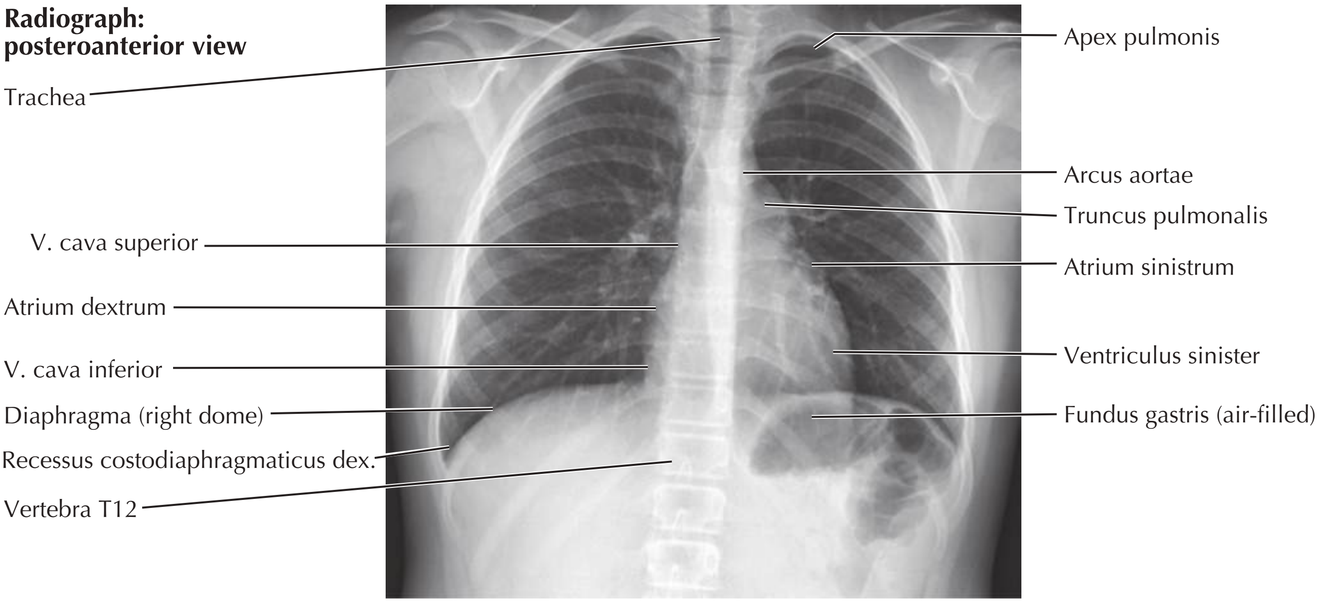
Innervation of Tracheobronchial Tree: Schema


From hypothalamic and higher centers
Ganglia inferiora
N. glossopharyngeus (CN IX)
Afferent nerves from nose and sinuses (via N. trigeminus [CN V] and N. glossopharyngeus [CN IX]) may also initiate reflexes in airways
N. vagus (CN X) (cholinergic; efferent to smooth muscle and glands; afferent from aorta, tracheobronchial mucosa, and alveoli)
Descending tracts in Medulla spinalis
Ganglion cervicale superius
N. laryngeus superior
Larynx
Nn. sympathici (adrenergic)
Sinus carotidis
Glomus caroticum
T1
T2
T3
T4
T5
Pars thoracica medullae spinalis
A. communis carotidis
Cough receptors
N. laryngeus recurrens sin.
Arcus aortae
Truncus sympathicus
Plexus pulmonalis
Cough receptors
Parasympathetic fibers
Sympathetic fibers
Afferent fibers
Irritant receptors
Stretch receptors (Hering-Breuer reflex)

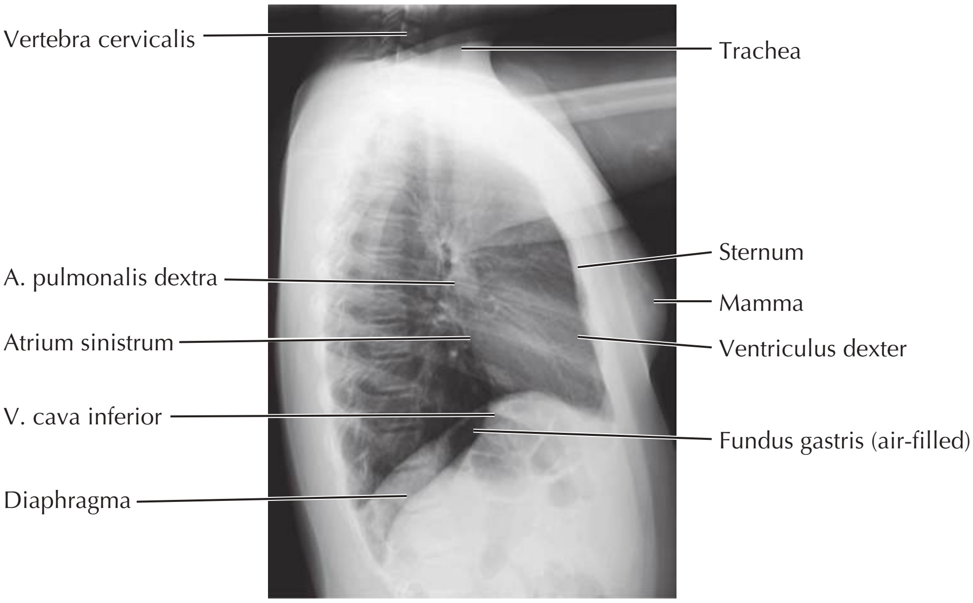

Vv. thyreoideae inferiores
Trachea
Thymus
A. communis carotidis
Truncus brachiocephalicus
V. brachiocephalica sin.
V. brachiocephalica dex.
V. jugularis interna
N. phrenicus
N. vagus (CN X)
M. scalenus anterior
Arcus aortae
Plexus brachialis
Ductus thoracicus
V. jugularis externa
N. laryngeus recurrens sin.
A. and V. subclavia
A. thoracica interna
V. cava superior
N. phrenicus; A. and V. pericardiacophrenica
Costa 1
Pars mediastinalis pleurae parietalis
N. phrenicus; A. and V. pericardiacophrenica
Pulmo dexter
Pulmo sinister
Pericardium fibrosum
Diaphragma
Line of fusion of Pericardium fibrosum and Diaphragma
A. thoracica interna
Pars mediastinalis
Pars diaphragmatica
Pars costalis
Pleura parietalis
A. epigastrica superior
A. musculophrenica


Pericardium (*cut edge*) (at site of reflection from great vessels)
N. vagus dex. (CN X)
N. laryngeus recurrens dex.
V. brachiocephalica dex.
N. phrenicus
A. and V. subclavia
A. and V. thoracica interna
N. phrenicus; A. and V. pericardiacophrenica
V. cava superior
A. pulmonalis dextra
Sinus transversus pericardii
V. pulmonalis dextra superior
Hilum pulmonis dex.
Pars mediastinalis pleurae parietalis (*cut edge*)
Pericardium (*cut edge*)
Truncus brachiocephalicus
V. brachiocephalica sin.
Arcus aortae
A. communis carotidis
V. jugularis interna sin.
N. vagus sin. (CN X)
Lig. arteriosum
N. laryngeus recurrens sin.
Truncus pulmonalis
A. pulmonalis sinistra
Sinus transversus pericardii
V. pulmonalis sinistra superior
Hilum pulmonis sin.
Pars mediastinalis pleurae parietalis (*cut edge*)
Pericardium (*cut edge*)
Ventriculus dexter
Conus arteriosus
Auricula sinistra (atrial appendage)
Apex cordis
Margo inferior cordis
Ventriculus sinister
Margo sinister cordis
Atrium dextrum
Auricula dextra (atrial appendage)
Sulcus coronarius; A. coronaria dextra
Sulcus interventricularis anterior; R. interventricularis anterior a. coronariae sin.
F. Netter M.D.

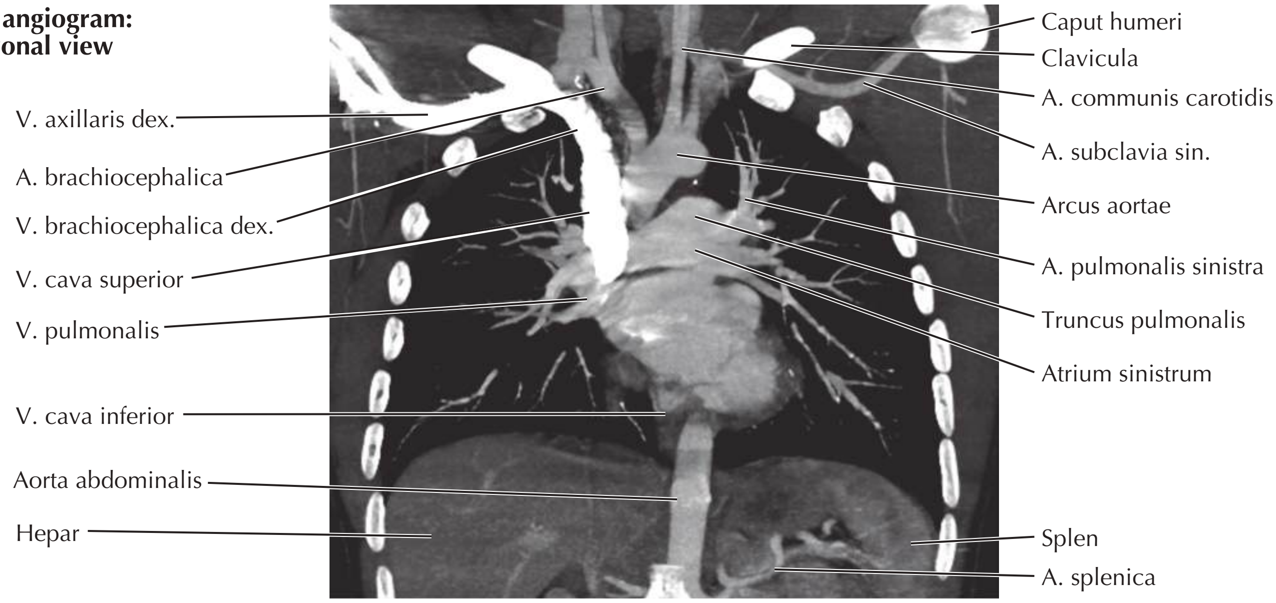
Radiograph: posteroanterior view

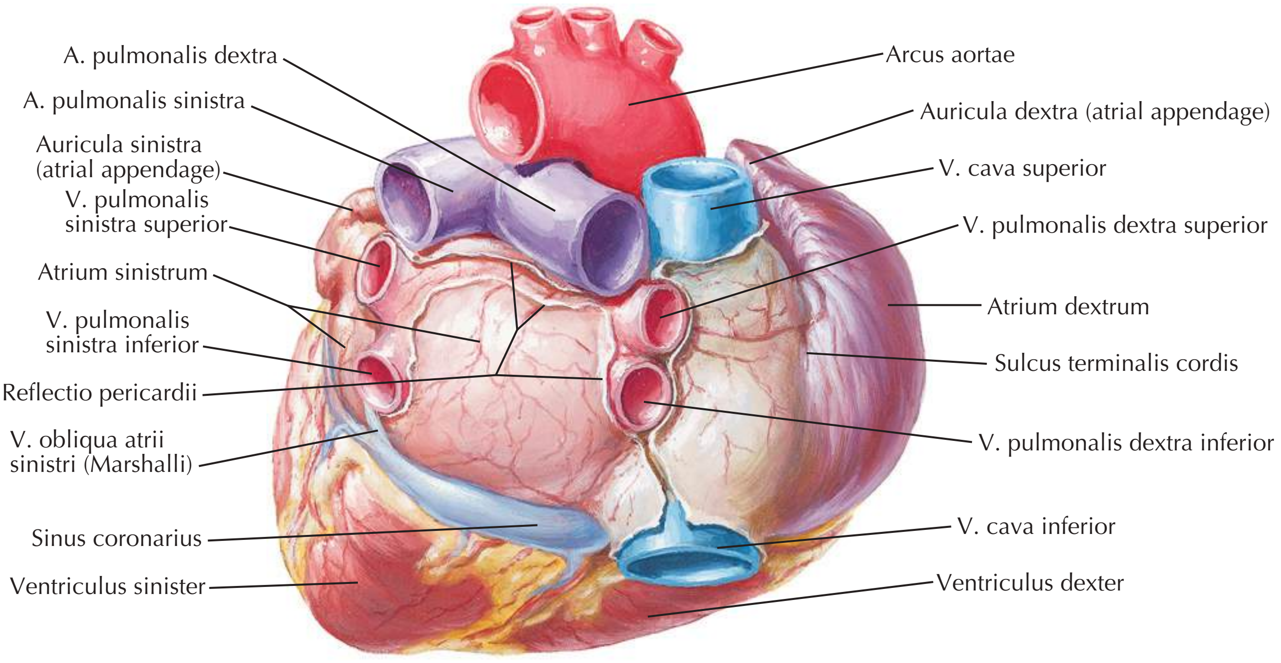

Trachea
Apex pulmonis
Arcus aortae
Truncus pulmonalis
V. cava superior
Atrium sinistrum
Atrium dextrum
Ventriculus sinister
V. cava inferior
Diaphragma (right dome)
Fundus gastris (air-filled)
Recessus costodiaphragmaticus dex.
Vertebra T12

Radiograph: lateral view

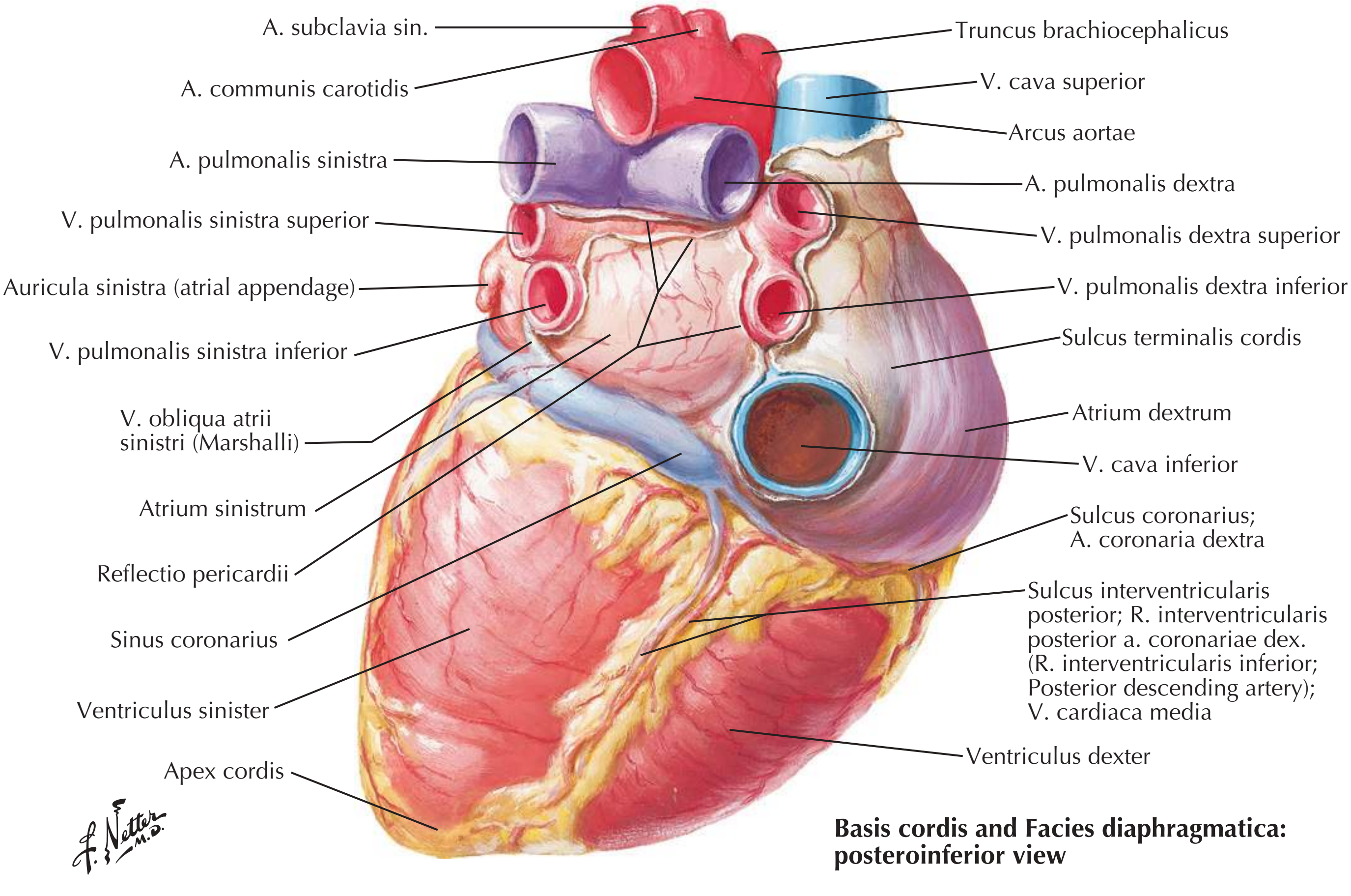

Vertebra cervicalis
Trachea
Sternum
A. pulmonalis dextra
Mamma
Atrium sinistrum
Ventriculus dexter
V. cava inferior
Fundus gastris (air-filled)
Diaphragma

CT angiogram: coronal view

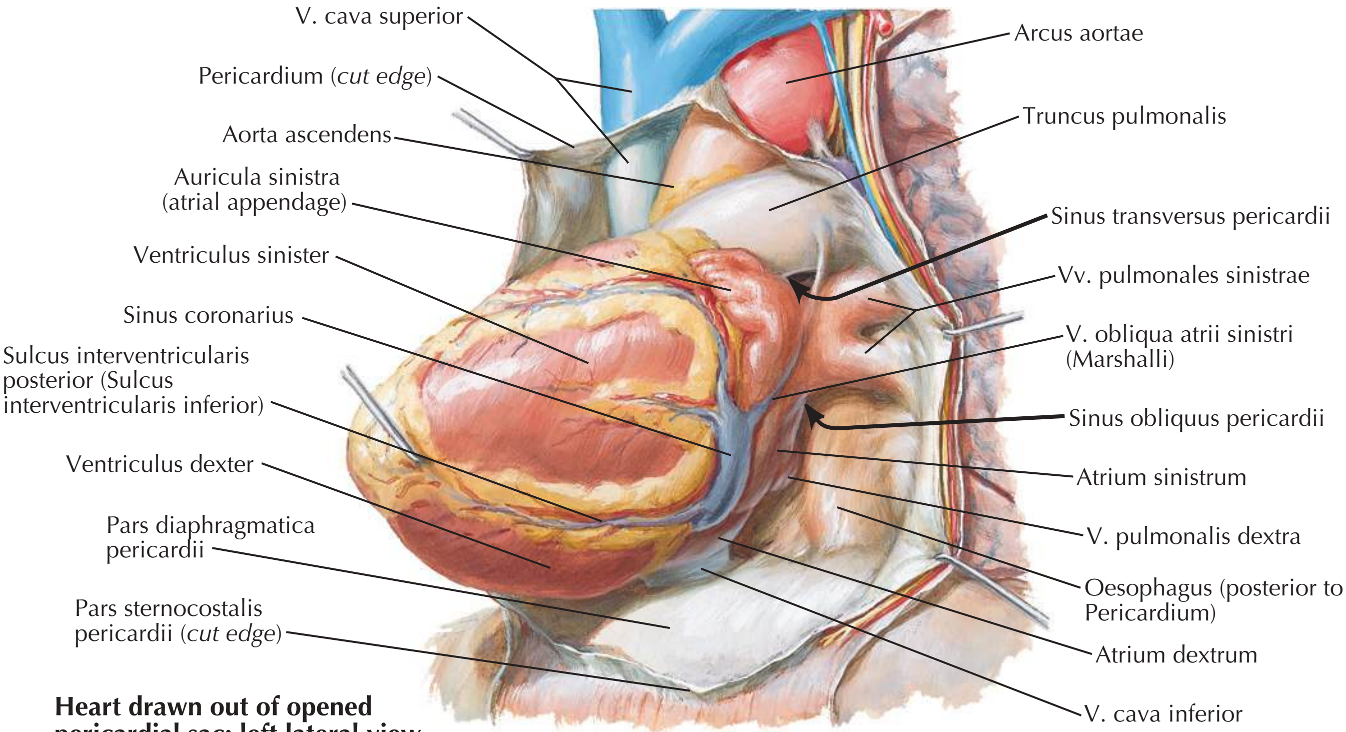

Caput humeri
Clavicula
A. communis carotidis
V. axillaris dex.
A. subclavia sin.
A. brachiocephalica
V. brachiocephalica dex.
Arcus aortae
V. cava superior
A. pulmonalis sinistra
Truncus pulmonalis
V. pulmonalis
Atrium sinistrum
V. cava inferior
Aorta abdominalis
Hepar
Splen
A. splenica


A. pulmonalis dextra
A. pulmonalis sinistra
Auricula sinistra (atrial appendage)
V. pulmonalis sinistra superior
Atrium sinistrum
V. pulmonalis sinistra inferior
Reflectio pericardii
V. obliqua atrii sinistri (Marshalli)
Sinus coronarius
Ventriculus sinister
Arcus aortae
Auricula dextra (atrial appendage)
V. cava superior
V. pulmonalis dextra superior
Atrium dextrum
Sulcus terminalis cordis
V. pulmonalis dextra inferior
V. cava inferior
Ventriculus dexter

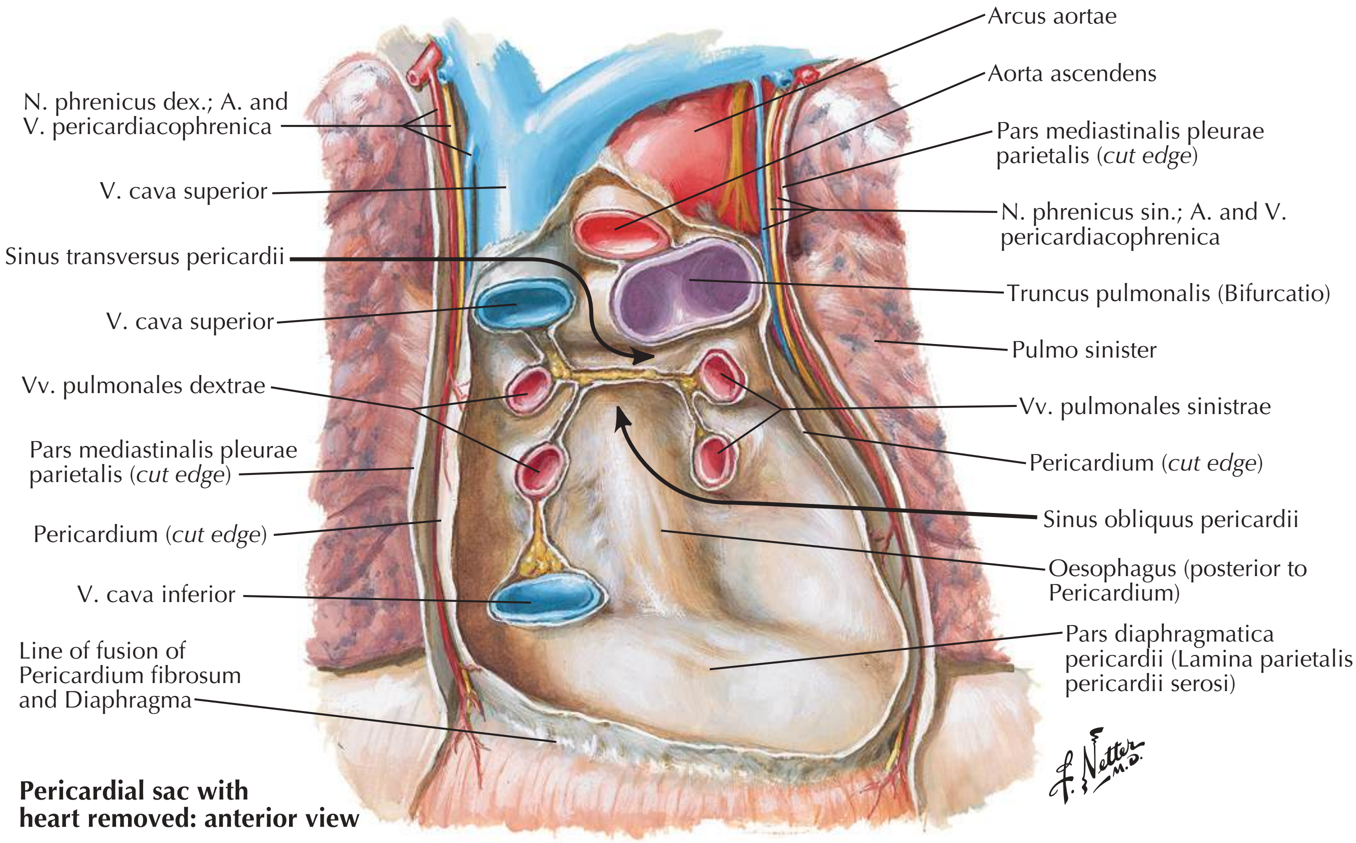
Basis cordis: posterior view


A. subclavia sin.
A. communis carotidis
A. pulmonalis sinistra
V. pulmonalis sinistra superior
Auricula sinistra (atrial appendage)
V. pulmonalis sinistra inferior
V. obliqua atrii sinistri (Marshalli)
Atrium sinistrum
Reflectio pericardii
Sinus coronarius
Ventriculus sinister
Apex cordis
Truncus brachiocephalicus
V. cava superior
Arcus aortae
A. pulmonalis dextra
V. pulmonalis dextra superior
V. pulmonalis dextra inferior
Sulcus terminalis cordis
Atrium dextrum
V. cava inferior
Sulcus coronarius; A. coronaria dextra
Sulcus interventricularis posterior; R. interventricularis posterior a. coronariae dex. (R. interventricularis inferior; Posterior descending artery); V. cardiaca media
Ventriculus dexter

Basis cordis and Facies diaphragmatica: posteroinferior view

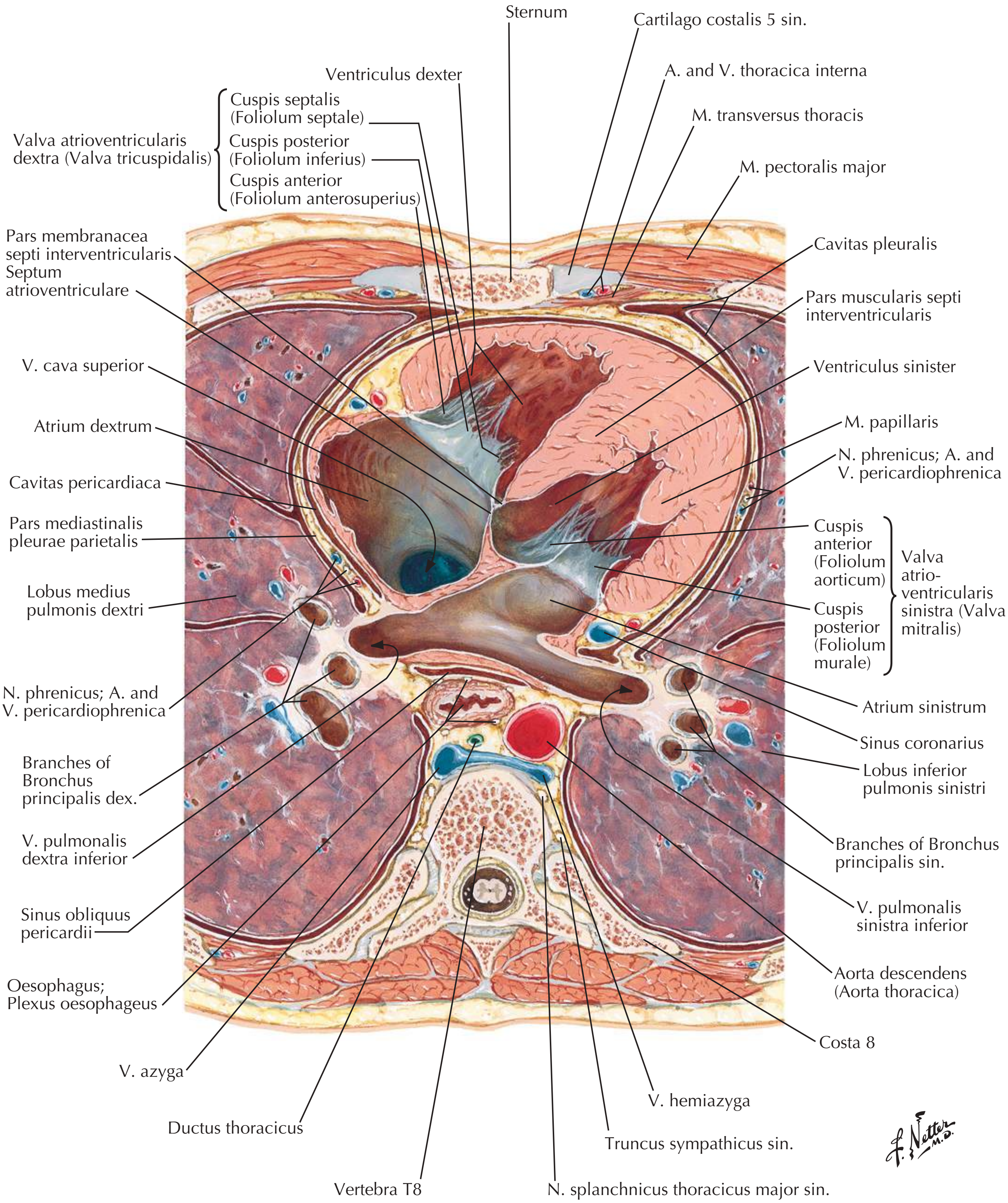

V. cava superior
Pericardium (*cut edge*)
Aorta ascendens
Auricula sinistra (atrial appendage)
Ventriculus sinister
Sinus coronarius
Sulcus interventricularis posterior (Sulcus interventricularis inferior)
Ventriculus dexter
Pars diaphragmatica pericardii
Pars sternocostalis pericardii (*cut edge*)
Arcus aortae
Truncus pulmonalis
Sinus transversus pericardii
Vv. pulmonales sinistrae
V. obliqua atrii sinistri (Marshalli)
Sinus obliquus pericardii
Atrium sinistrum
V. pulmonalis dextra
Oesophagus (posterior to Pericardium)
Atrium dextrum
V. cava inferior

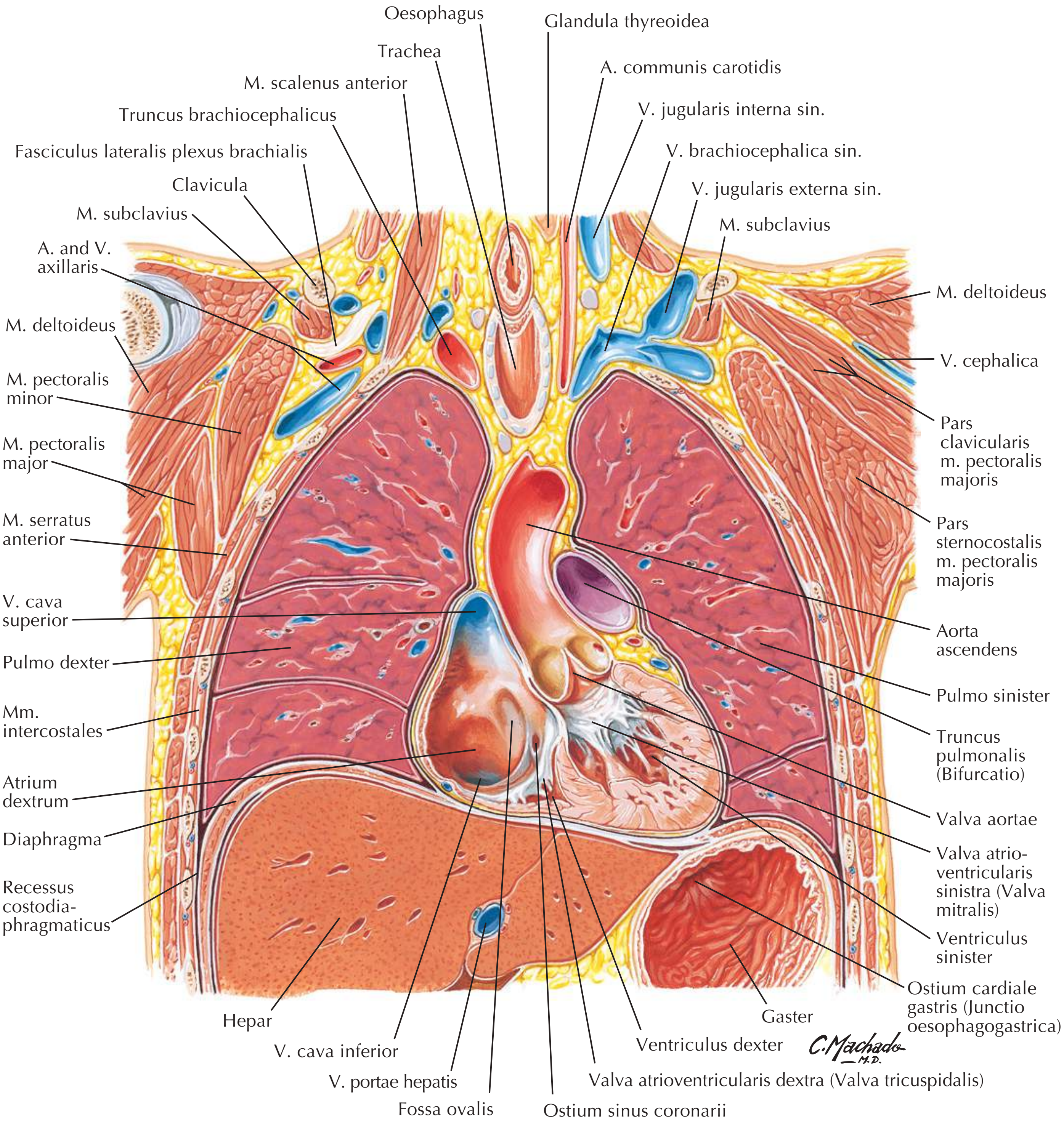
Heart drawn out of opened pericardial sac: left lateral view


N. phrenicus dex.; A. and V. pericardiacophrenica
V. cava superior
Sinus transversus pericardii
V. cava superior
Vv. pulmonales dextrae
Pars mediastinalis pleurae parietalis (*cut edge*)
Pericardium (*cut edge*)
V. cava inferior
Line of fusion of Pericardium fibrosum and Diaphragma
Arcus aortae
Aorta ascendens
Pars mediastinalis pleurae parietalis (*cut edge*)
N. phrenicus sin.; A. and V. pericardiacophrenica
Truncus pulmonalis (Bifurcatio)
Pulmo sinister
Vv. pulmonales sinistrae
Pericardium (*cut edge*)
Sinus obliquus pericardii
Oesophagus (posterior to Pericardium)
Pars diaphragmatica pericardii (Lamina parietalis pericardii serosi)

Pericardial sac with heart removed: anterior view

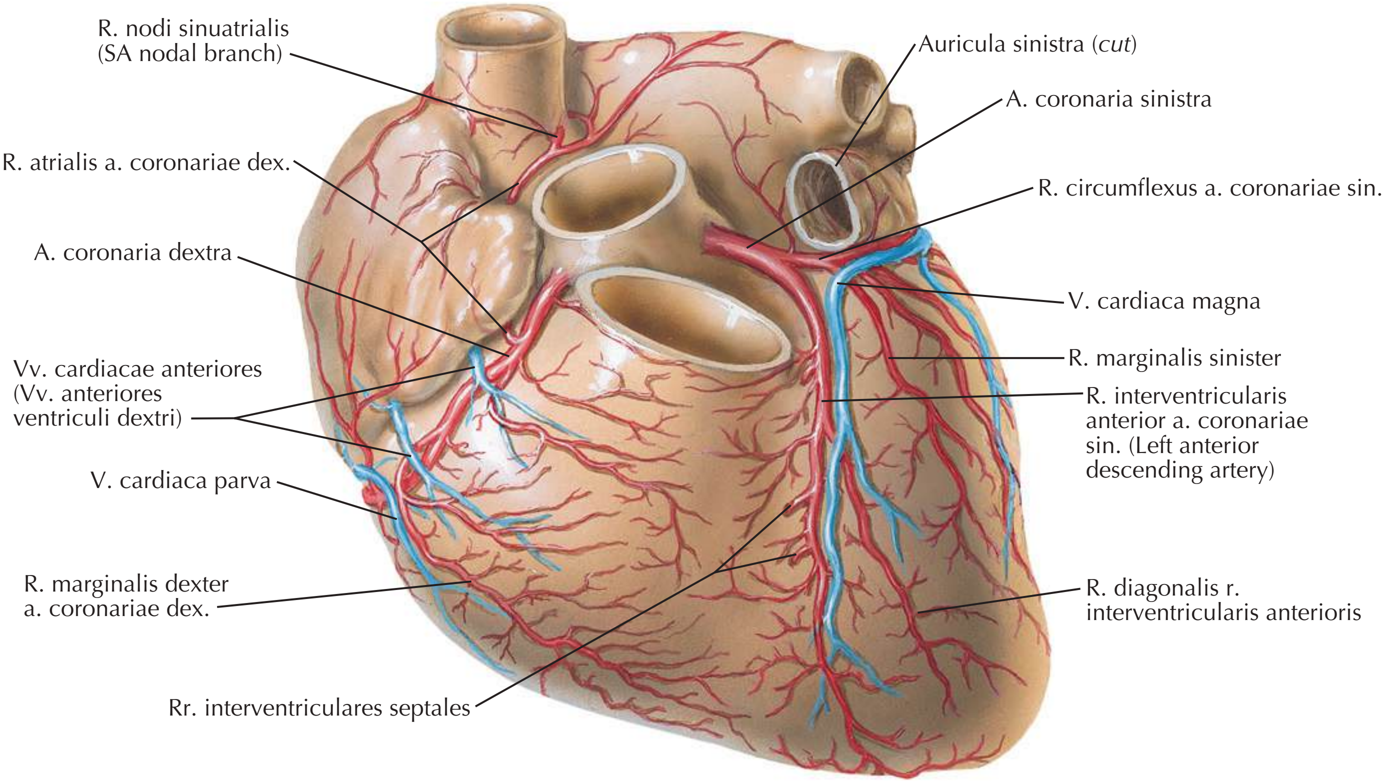
Mediastinum: Cross Section


Sternum
Cartilago costalis 5 sin.
A. and V. thoracica interna
M. transversus thoracis
M. pectoralis major
Ventriculus dexter
Valva atrioventricularis dextra (Valva tricuspidalis)
Cuspis septalis (Foliolum septale)
Cuspis posterior (Foliolum inferius)
Cuspis anterior (Foliolum anterosuperius)
Pars membranacea septi interventricularis
Septum atrioventriculare
V. cava superior
Atrium dextrum
Cavitas pericardiaca
Pars mediastinalis pleurae parietalis
Lobus medius pulmonis dextri
N. phrenicus; A. and V. pericardiophrenica
Branches of Bronchus principalis dex.
V. pulmonalis dextra inferior
Sinus obliquus pericardii
Oesophagus; Plexus oesophageus
V. azyga
Ductus thoracicus
Vertebra T8
N. splanchnicus thoracicus major sin.
Truncus sympathicus sin.
V. hemiazyga
Cavitas pleuralis
Pars muscularis septi interventricularis
Ventriculus sinister
M. papillaris
N. phrenicus; A. and V. pericardiophrenica
Cuspis anterior (Foliolum aorticum)
Cuspis posterior (Foliolum murale)
Valva atrio-ventricularis sinistra (Valva mitralis)
Atrium sinistrum
Sinus coronarius
Lobus inferior pulmonis sinistri
Branches of Bronchus principalis sin.
V. pulmonalis sinistra inferior
Aorta descendens (Aorta thoracica)
Costa 8
F. Netter M.D.

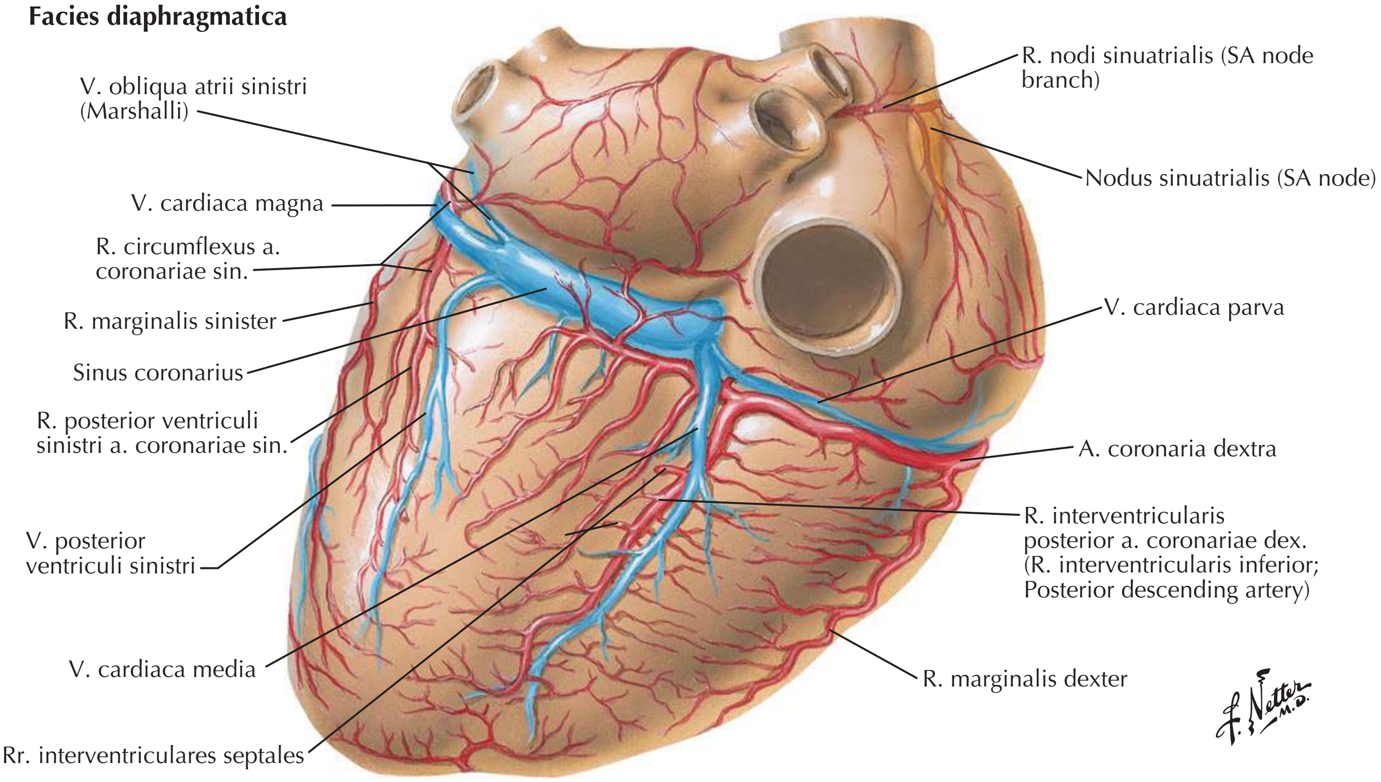

Oesophagus
Glandula thyreoidea
Trachea
A. communis carotidis
M. scalenus anterior
V. jugularis interna sin.
Truncus brachiocephalicus
Fasciculus lateralis plexus brachialis
V. brachiocephalica sin.
Clavicula
V. jugularis externa sin.
M. subclavius
M. subclavius
A. and V. axillaris
M. deltoideus
M. deltoideus
V. cephalica
M. pectoralis minor
Pars clavicularis m. pectoralis majoris
M. pectoralis major
M. serratus anterior
Pars sternocostalis m. pectoralis majoris
V. cava superior
Aorta ascendens
Pulmo dexter
Pulmo sinister
Mm. intercostales
Truncus pulmonalis (Bifurcatio)
Atrium dextrum
Valva aortae
Diaphragma
Valva atrioventricularis sinistra (Valva mitralis)
Recessus costodiaphragmaticus
Ventriculus sinister
Ostium cardiale gastris (Junctio oesophagogastrica)
Hepar
Gaster
V. cava inferior
Ventriculus dexter
C. Machado M.D.
V. portae hepatis
Valva atrioventricularis dextra (Valva tricuspidalis)
Fossa ovalis
Ostium sinus coronarii

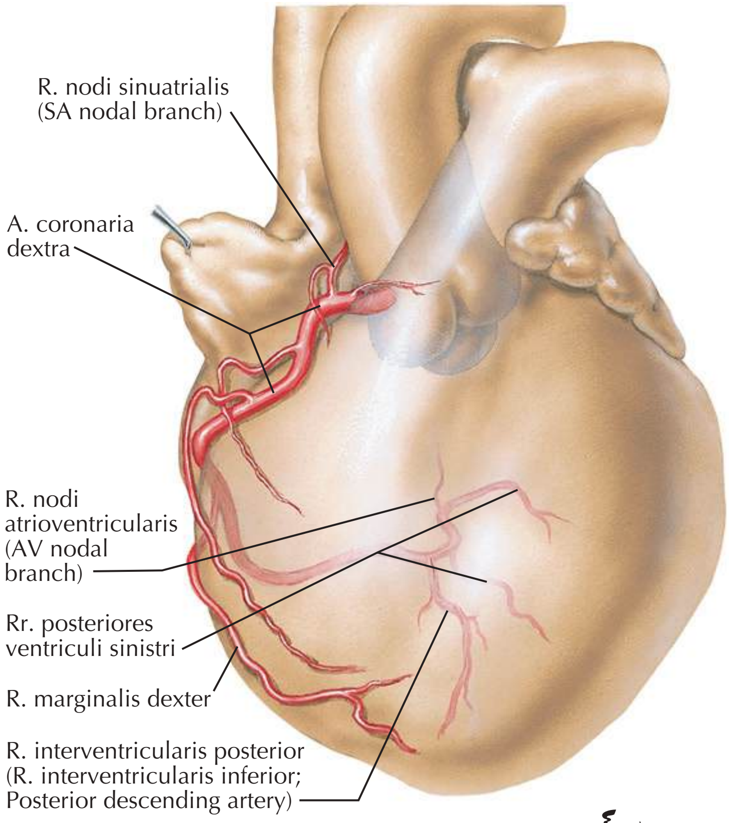
Coronary Arteries and Cardiac Veins

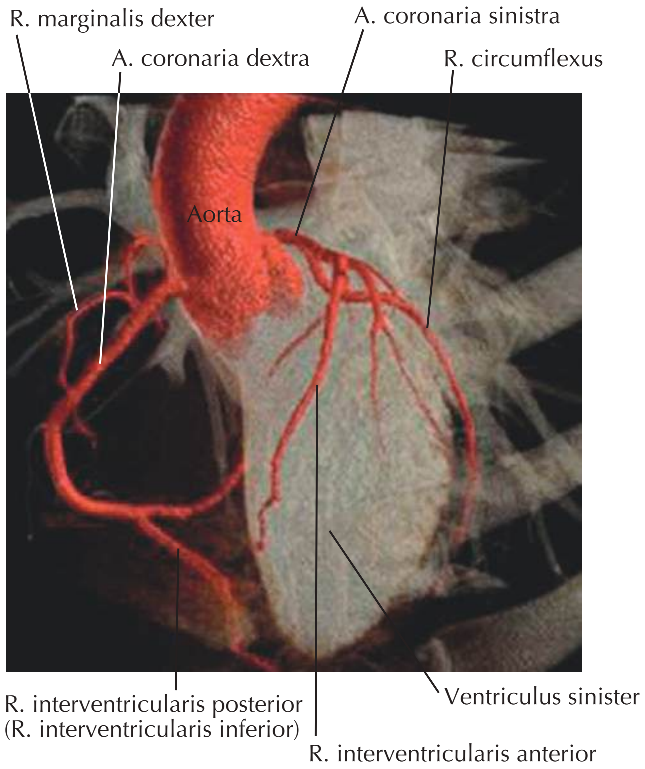
Facies sternocostalis


R. nodi sinuatrialis (SA nodal branch)
R. atrialis a. coronariae dex.
A. coronaria dextra
Vv. cardiacae anteriores (Vv. anteriores ventriculi dextri)
V. cardiaca parva
R. marginalis dexter a. coronariae dex.
Rr. interventriculares septales
Auricula sinistra (*cut*)
A. coronaria sinistra
R. circumflexus a. coronariae sin.
V. cardiaca magna
R. marginalis sinister
R. interventricularis anterior a. coronariae sin. (Left anterior descending artery)
R. diagonalis r. interventricularis anterioris

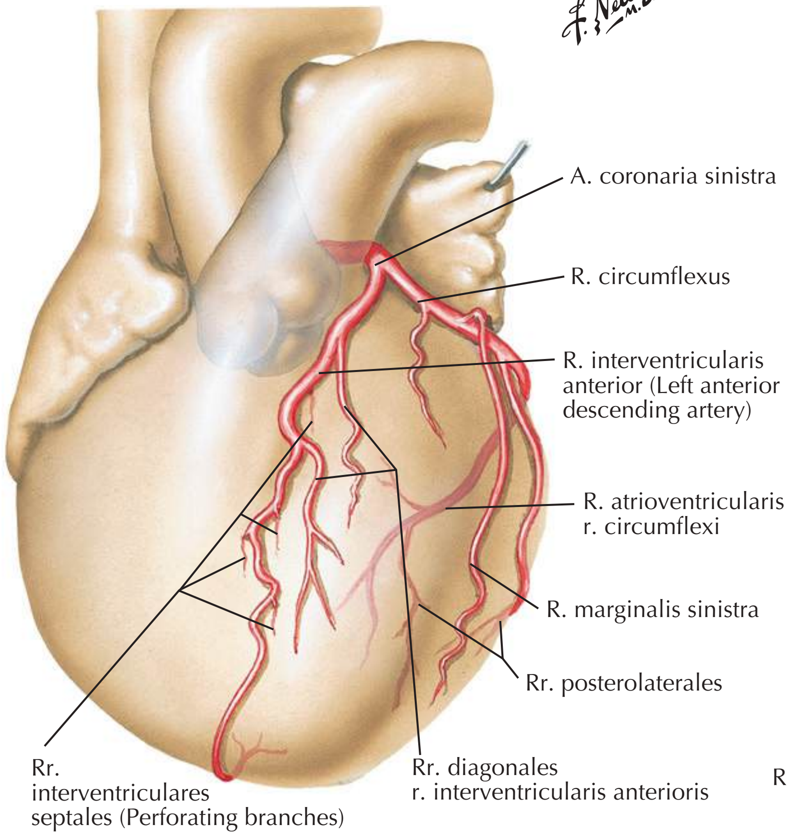
Facies diaphragmatica

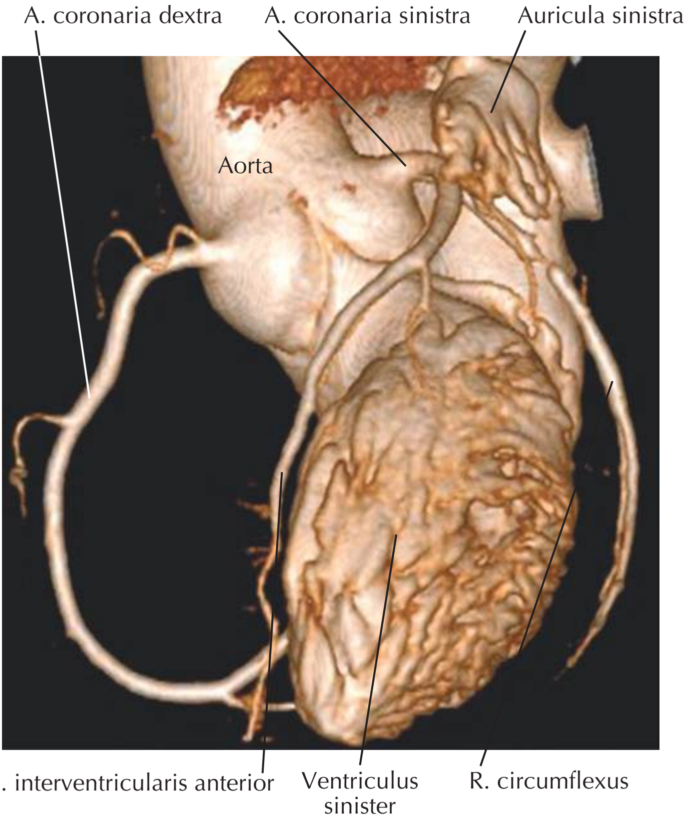

V. obliqua atrii sinistri (Marshalli)
V. cardiaca magna
R. circumflexus a. coronariae sin.
R. marginalis sinister
Sinus coronarius
R. posterior ventriculi sinistri a. coronariae sin.
V. posterior ventriculi sinistri
V. cardiaca media
Rr. interventriculares septales
R. nodi sinuatrialis (SA node branch)
Nodus sinuatrialis (SA node)
V. cardiaca parva
A. coronaria dextra
R. interventricularis posterior a. coronariae dex. (R. interventricularis inferior; Posterior descending artery)
R. marginalis dexter

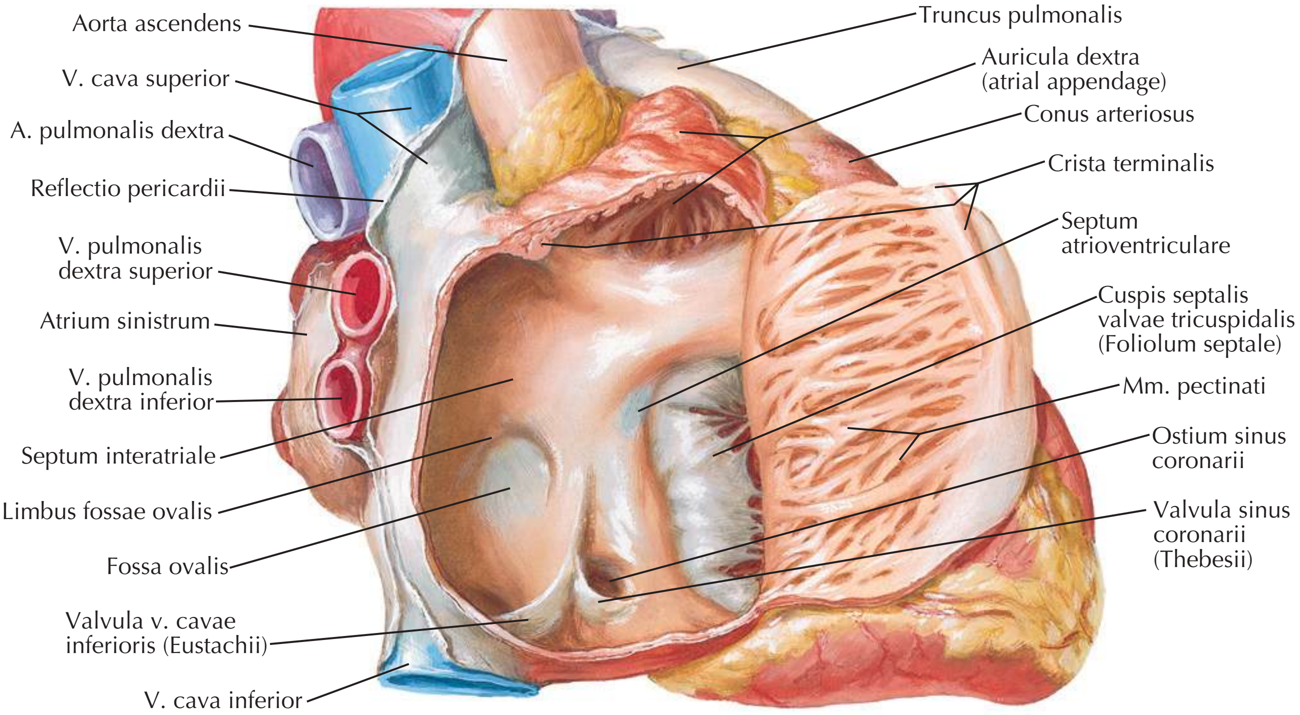

R. nodi sinuatrialis
(SA nodal branch)
A. coronaria
dextra
R. nodi
atrioventricularis
(AV nodal
branch)
Rr. posteriores
ventriculi sinistri
R. marginalis dexter
R. interventricularis posterior
(R. interventricularis inferior;
Posterior descending artery)


R. marginalis dexter
A. coronaria dextra
A. coronaria sinistra
R. circumflexus
Aorta
R. interventricularis posterior
(R. interventricularis inferior)
R. interventricularis anterior
Ventriculus sinister

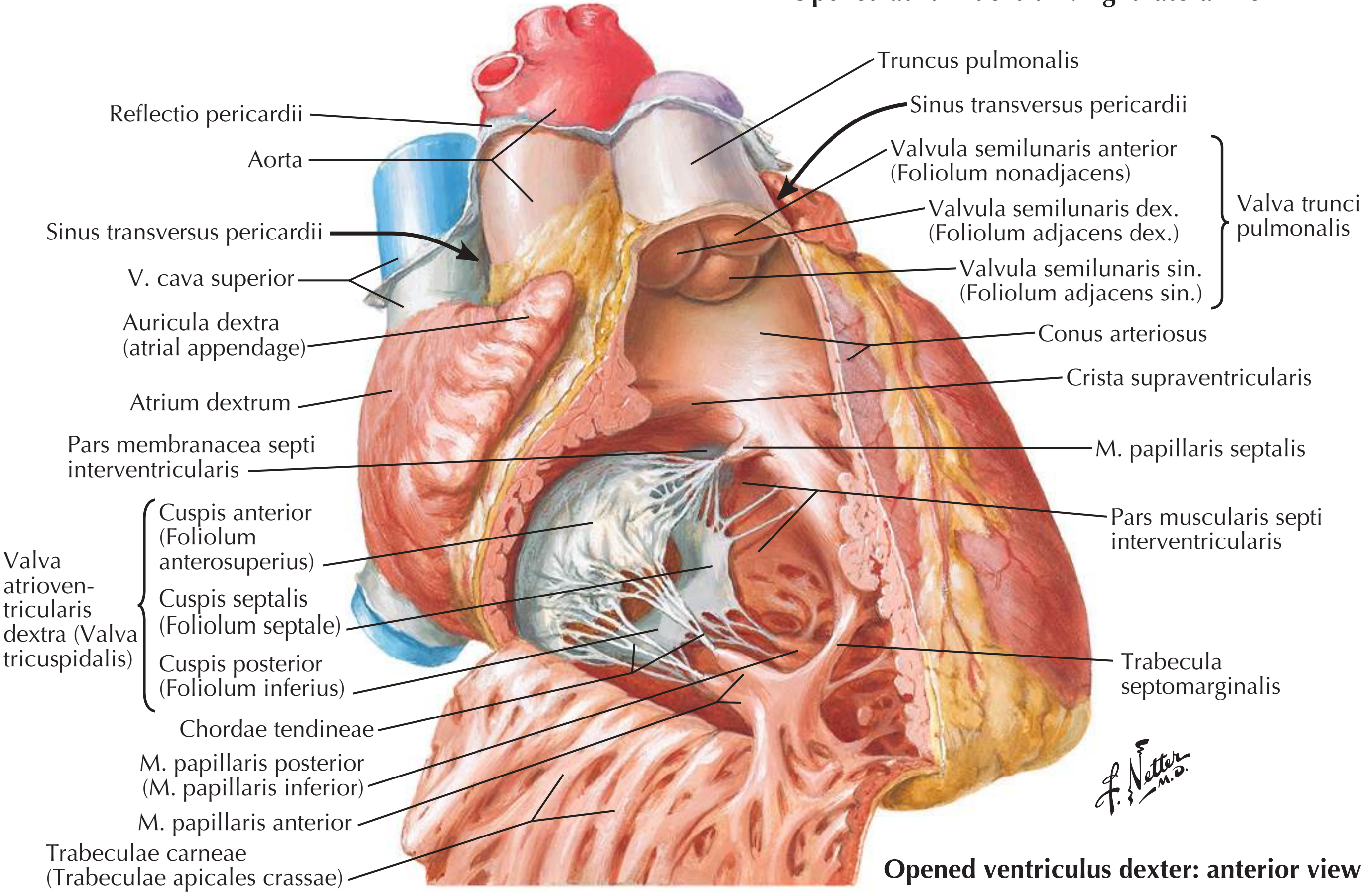
F. Netter M.D.


A. coronaria sinistra
R. circumflexus
R. interventricularis
anterior (Left anterior
descending artery)
R. atrioventricularis
r. circumflexi
R. marginalis sinistra
Rr. posterolaterales
Rr.
interventriculares
septales (Perforating branches)
Rr. diagonales
r. interventricularis anterioris

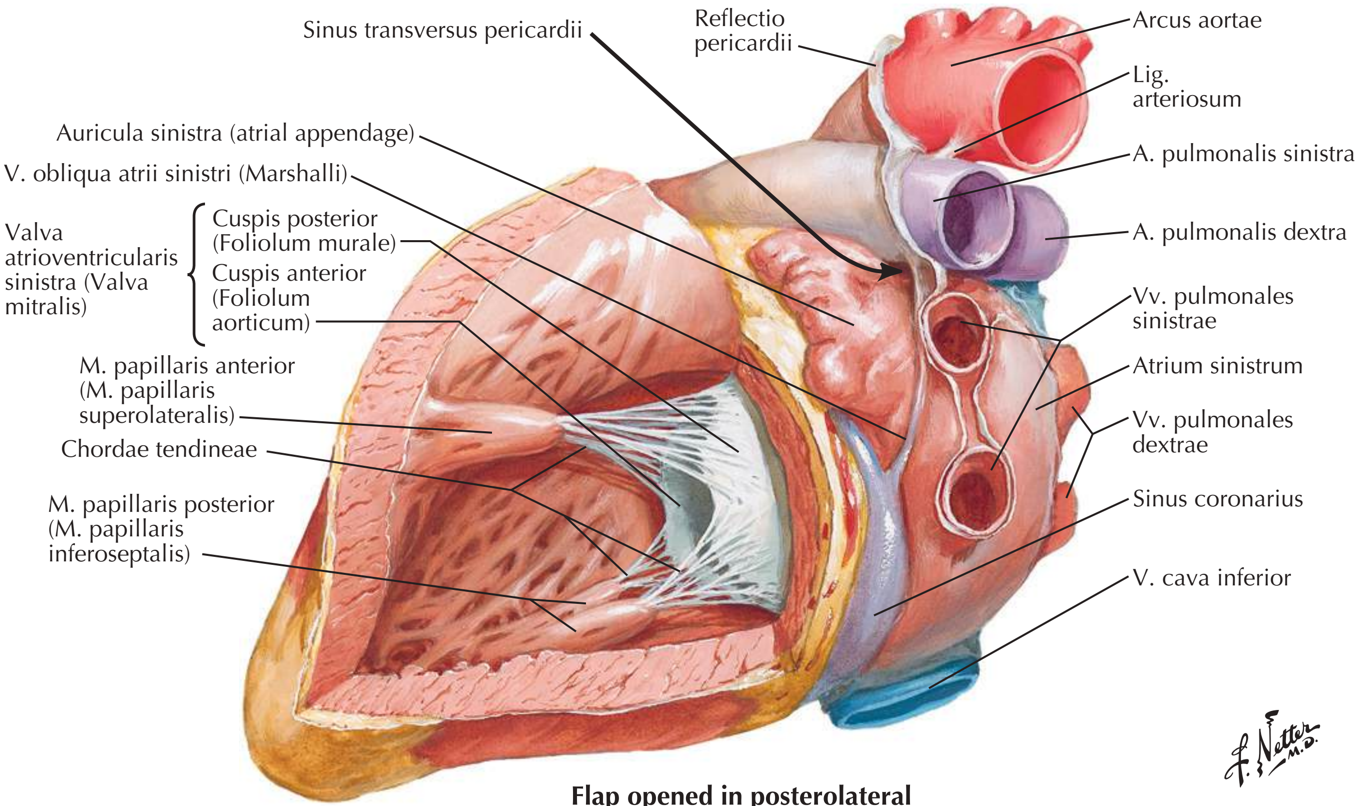

A. coronaria dextra
A. coronaria sinistra
Auricula sinistra
Aorta
R. interventricularis anterior
Ventriculus
sinister
R. circumflexus


Aorta ascendens
V. cava superior
A. pulmonalis dextra
Reflectio pericardii
V. pulmonalis dextra superior
Atrium sinistrum
V. pulmonalis dextra inferior
Septum interatriale
Limbus fossae ovalis
Fossa ovalis
Valvula v. cavae inferioris (Eustachii)
V. cava inferior
Truncus pulmonalis
Auricula dextra (atrial appendage)
Conus arteriosus
Crista terminalis
Septum atrioventriculare
Cuspis septalis valvae tricuspidalis (Foliolum septale)
Mm. pectinati
Ostium sinus coronarii
Valvula sinus coronarii (Thebesii)

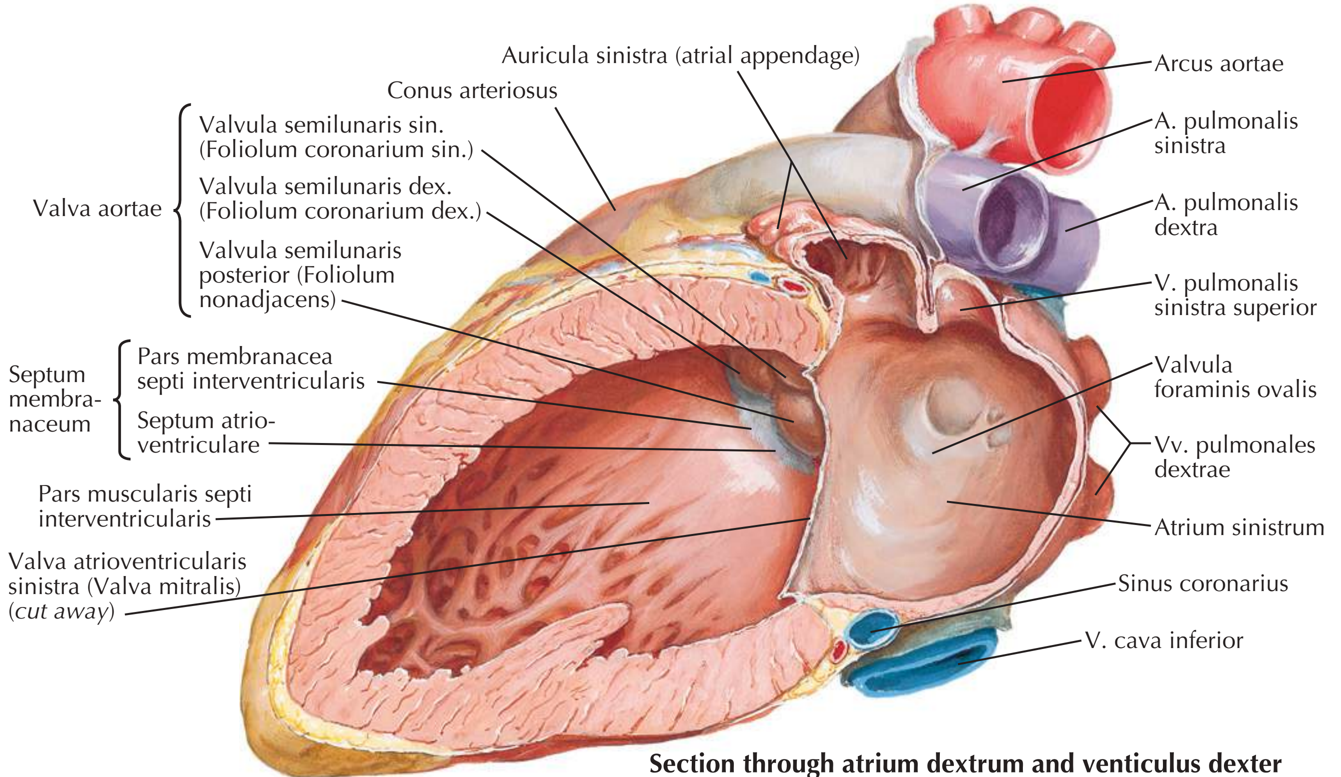
Opened atrium dextrum: right lateral view


Reflectio pericardii
Aorta
Sinus transversus pericardii
V. cava superior
Auricula dextra (atrial appendage)
Atrium dextrum
Pars membranacea septi interventricularis
Valva atrioventricularis dextra (Valva tricuspidalis)
Cuspis anterior (Foliolum anterosuperius)
Cuspis septalis (Foliolum septale)
Cuspis posterior (Foliolum inferius)
Chordae tendineae
M. papillaris posterior (M. papillaris inferior)
M. papillaris anterior
Trabeculae carneae (Trabeculae apicales crassae)
Truncus pulmonalis
Sinus transversus pericardii
Valvula semilunaris anterior (Foliolum nonadjacens)
Valvula semilunaris dex. (Foliolum adjacens dex.)
Valvula semilunaris sin. (Foliolum adjacens sin.)
Valva trunci pulmonalis
Conus arteriosus
Crista supraventricularis
M. papillaris septalis
Pars muscularis septi interventricularis
Trabecula septomarginalis
F. Netter M.D.

Opened ventriculus dexter: anterior view

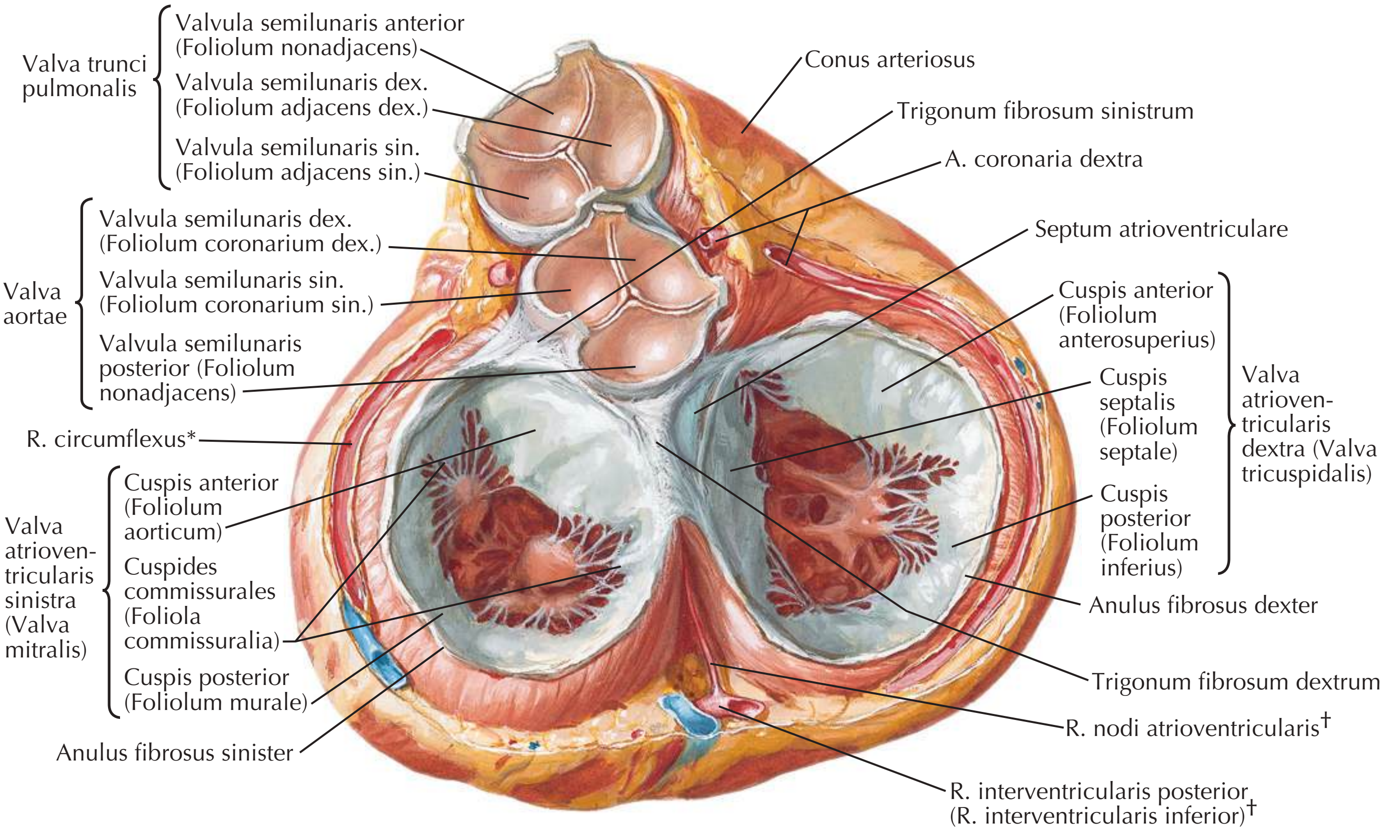

Sinus transversus pericardii
Reflectio pericardii
Arcus aortae
Lig. arteriosum
A. pulmonalis sinistra
A. pulmonalis dextra
Vv. pulmonales sinistrae
Atrium sinistrum
Vv. pulmonales dextrae
Sinus coronarius
V. cava inferior
Auricula sinistra (atrial appendage)
V. obliqua atrii sinistri (Marshalli)
Valva atrioventricularis sinistra (Valva mitralis)
Cuspis posterior (Foliolum murale)
Cuspis anterior (Foliolum aorticum)
M. papillaris anterior (M. papillaris superolateralis)
Chordae tendineae
M. papillaris posterior (M. papillaris inferoseptalis)

Flap opened in posterolateral wall of venticulus sinister

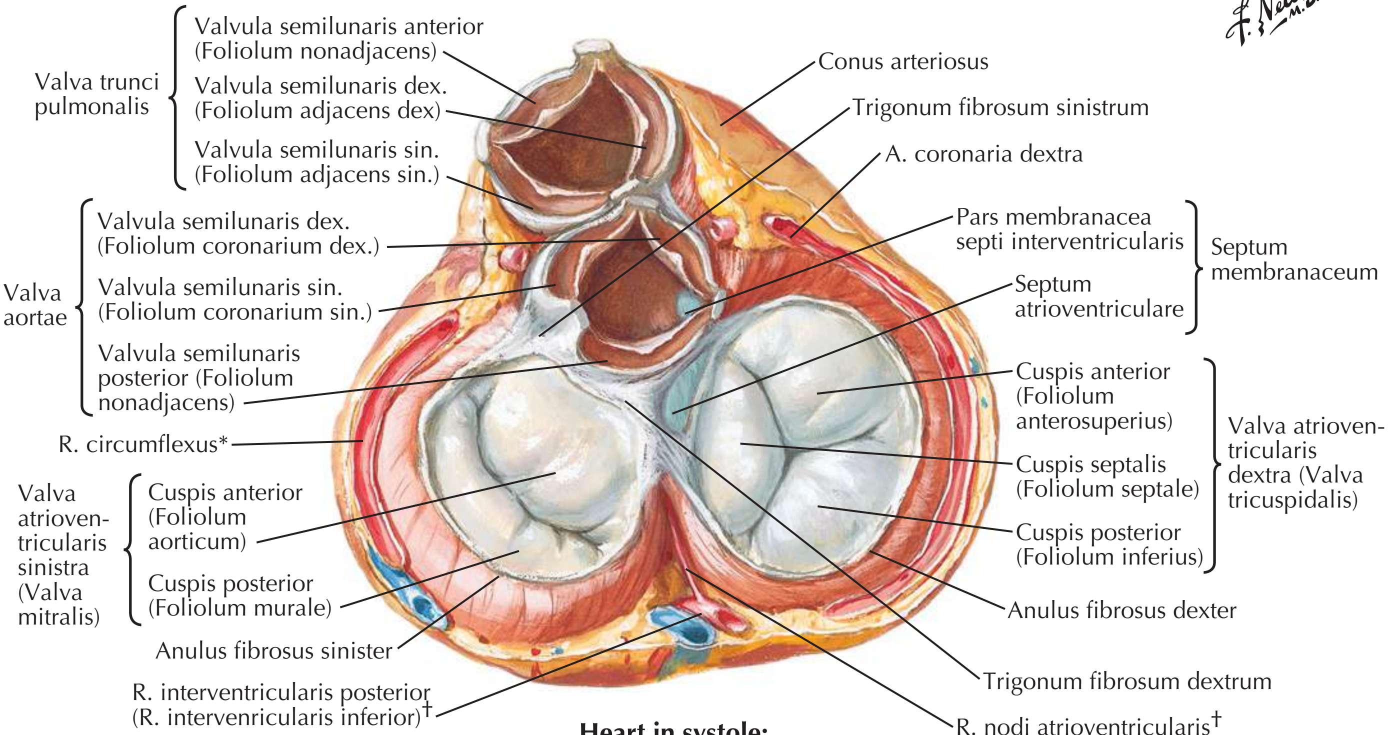

Auricula sinistra (atrial appendage)
Conus arteriosus
Valva aortae
Valvula semilunaris sin. (Foliolum coronarium sin.)
Valvula semilunaris dex. (Foliolum coronarium dex.)
Valvula semilunaris posterior (Foliolum nonadjacens)
Septum membranaceum
Pars membranacea septi interventricularis
Septum atrioventriculare
Pars muscularis septi interventricularis
Valva atrioventricularis sinistra (Valva mitralis) (cut away)
Arcus aortae
A. pulmonalis sinistra
A. pulmonalis dextra
V. pulmonalis sinistra superior
Valvula foraminis ovalis
Vv. pulmonales dextrae
Atrium sinistrum
Sinus coronarius
V. cava inferior

Section through atrium dextrum and venticulus dexter with valva atrioventricularis sinistra (valva mitralis) cut away

Valves and Fibrous Skeleton of Heart

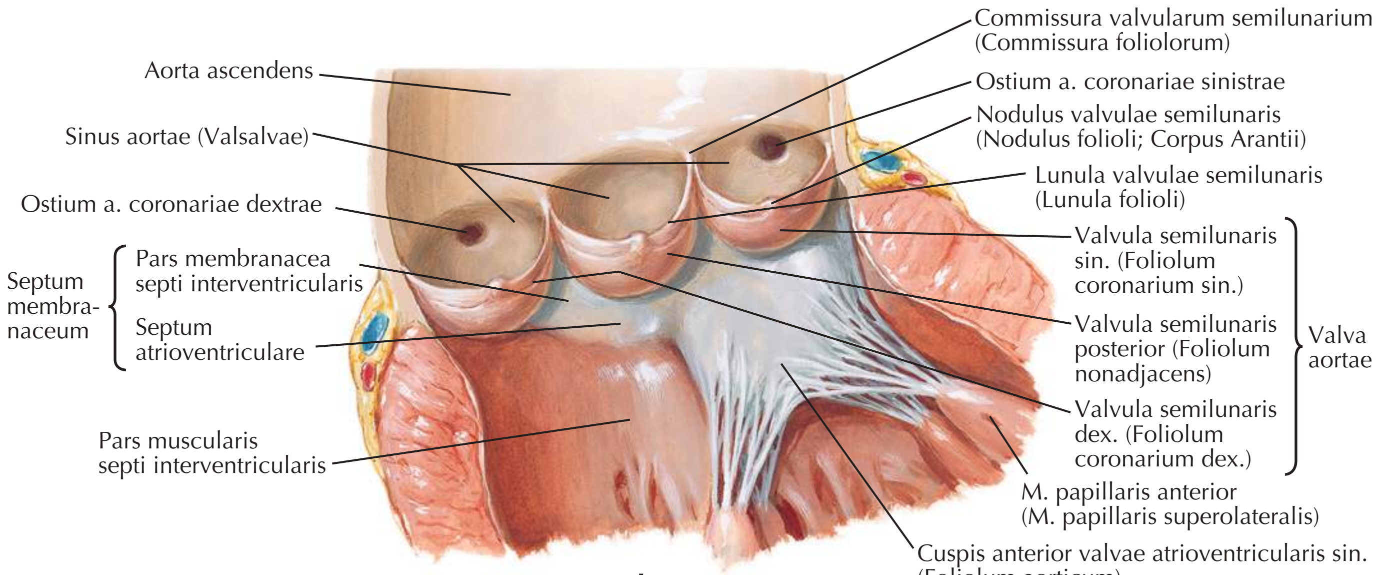

Valva trunci pulmonalis
Valvula semilunaris anterior (Foliolum nonadjacens)
Valvula semilunaris dex. (Foliolum adjacens dex.)
Valvula semilunaris sin. (Foliolum adjacens sin.)
Valva aortae
Valvula semilunaris dex. (Foliolum coronarium dex.)
Valvula semilunaris sin. (Foliolum coronarium sin.)
Valvula semilunaris posterior (Foliolum nonadjacens)
R. circumflexus*
Valva atrioventricularis sinistra (Valva mitralis)
Cuspis anterior (Foliolum aorticum)
Cuspides commissurales (Foliola commissuralia)
Cuspis posterior (Foliolum murale)
Anulus fibrosus sinister
Conus arteriosus
Trigonum fibrosum sinistrum
A. coronaria dextra
Septum atrioventriculare
Cuspis anterior (Foliolum anterosuperius)
Cuspis septalis (Foliolum septale)
Cuspis posterior (Foliolum inferius)
Valva atrioventricularis dextra (Valva tricuspidalis)
Anulus fibrosus dexter
Trigonum fibrosum dextrum
R. nodi atrioventricularis†
R. interventricularis posterior (R. interventricularis inferior)†

Heart in diastole: viewed from base with atria removed

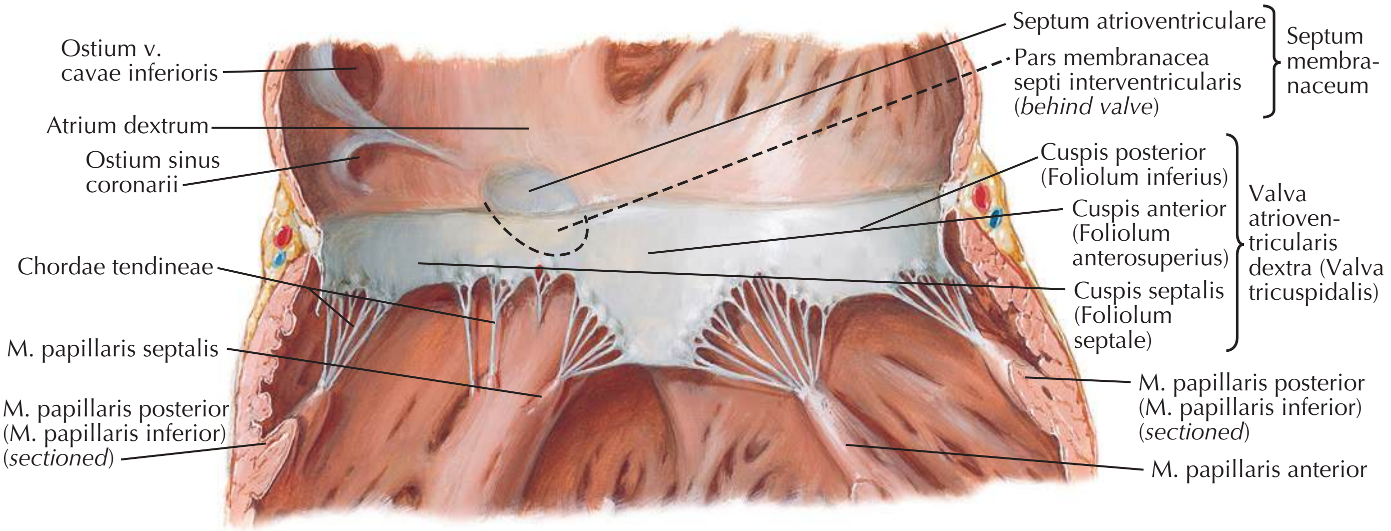

Valva trunci pulmonalis
Valvula semilunaris anterior (Foliolum nonadjacens)
Valvula semilunaris dex. (Foliolum adjacens dex)
Valvula semilunaris sin. (Foliolum adjacens sin.)
Valva aortae
Valvula semilunaris dex. (Foliolum coronarium dex.)
Valvula semilunaris sin. (Foliolum coronarium sin.)
Valvula semilunaris posterior (Foliolum nonadjacens)
R. circumflexus*
Valva atrioventricularis sinistra (Valva mitralis)
Cuspis anterior (Foliolum aorticum)
Cuspis posterior (Foliolum murale)
Anulus fibrosus sinister
R. interventricularis posterior (R. intervenricularis inferior)†
Conus arteriosus
Trigonum fibrosum sinistrum
A. coronaria dextra
Pars membranacea septi interventricularis
Septum atrioventriculare
Septum membranaceum
Cuspis anterior (Foliolum anterosuperius)
Cuspis septalis (Foliolum septale)
Cuspis posterior (Foliolum inferius)
Valva atrioventricularis dextra (Valva tricuspidalis)
Anulus fibrosus dexter
Trigonum fibrosum dextrum
R. nodi atrioventricularis†

Heart in systole: viewed from base with atria removed

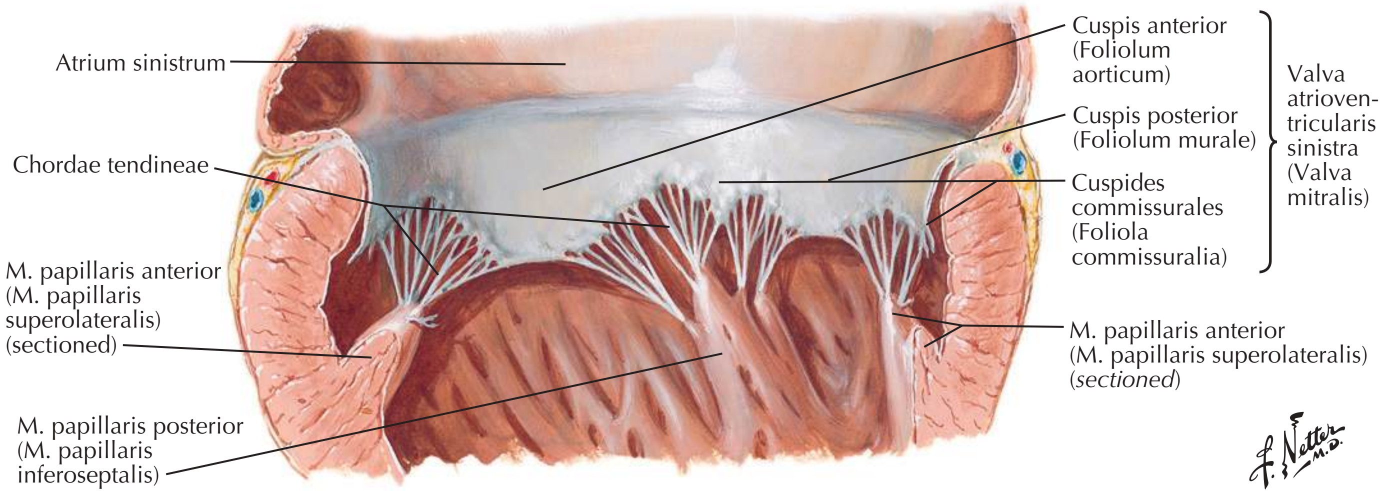
*Of A. coronaria sinistra
†Of A. coronaria dextra


Aorta ascendens
Sinus aortae (Valsalvae)
Ostium a. coronariae dextrae
Septum membranaceum
Pars membranacea septi interventricularis
Septum atrioventriculare
Pars muscularis septi interventricularis
Commissura valvularum semilunarium (Commissura foliolorum)
Ostium a. coronariae sinistrae
Nodulus valvulae semilunaris (Nodulus folioli; Corpus Arantii)
Lunula valvulae semilunaris (Lunula folioli)
Valvula semilunaris sin. (Foliolum coronarium sin.)
Valvula semilunaris posterior (Foliolum nonadjacens)
Valvula semilunaris dex. (Foliolum coronarium dex.)
Valva aortae
M. papillaris anterior (M. papillaris superolateralis)
Cuspis anterior valvae atrioventricularis sin. (Foliolum aorticum)

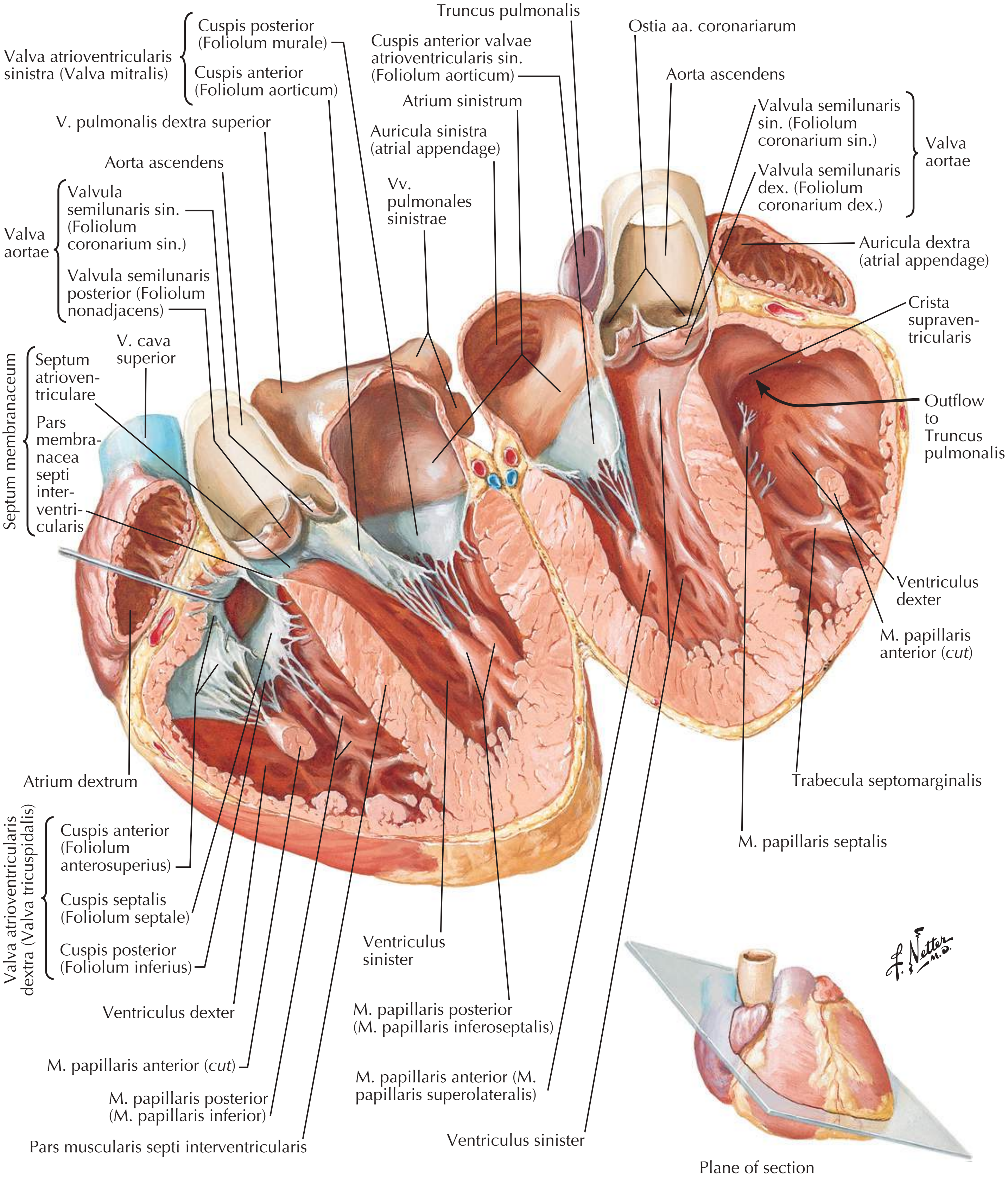
Valva aortae

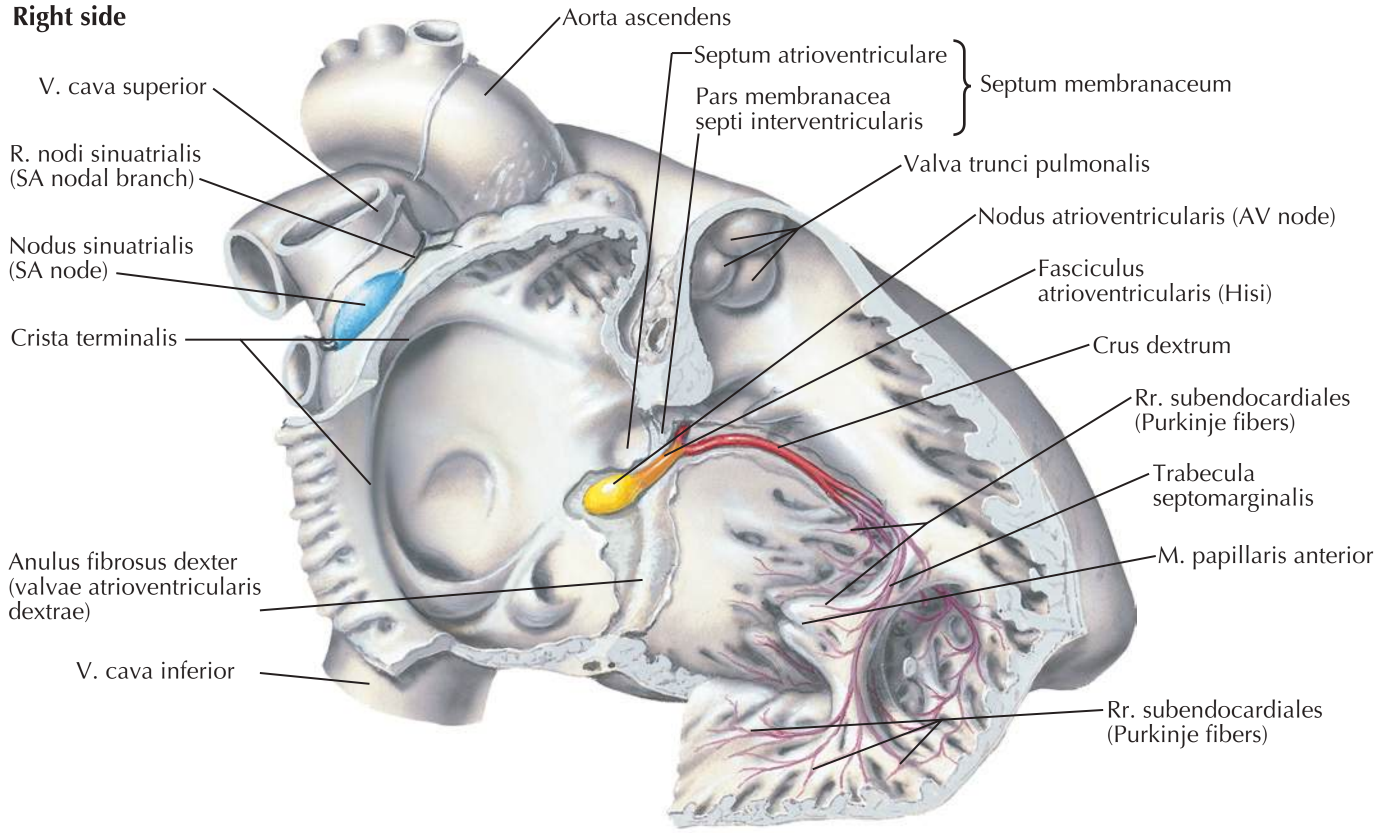

Ostium v. cavae inferioris
Atrium dextrum
Ostium sinus coronarii
Chordae tendineae
M. papillaris septalis
M. papillaris posterior (M. papillaris inferior) (sectioned)
Septum atrioventriculare
Pars membranacea septi interventricularis (behind valve)
Septum membranaceum
Cuspis posterior (Foliolum inferius)
Cuspis anterior (Foliolum anterosuperius)
Cuspis septalis (Foliolum septale)
Valva atrioventricularis dextra (Valva tricuspidalis)
M. papillaris posterior (M. papillaris inferior) (sectioned)
M. papillaris anterior

Valva atrioventricularis dextra (Valva tricuspidalis)


Atrium sinistrum
Chordae tendineae
M. papillaris anterior (M. papillaris superolateralis) (sectioned)
M. papillaris posterior (M. papillaris inferoseptalis)
Cuspis anterior (Foliolum aorticum)
Cuspis posterior (Foliolum murale)
Cuspides commissurales (Foliola commissuralia)
Valva atrioventricularis sinistra (Valva mitralis)
M. papillaris anterior (M. papillaris superolateralis) (sectioned)
F. Netter M.D.

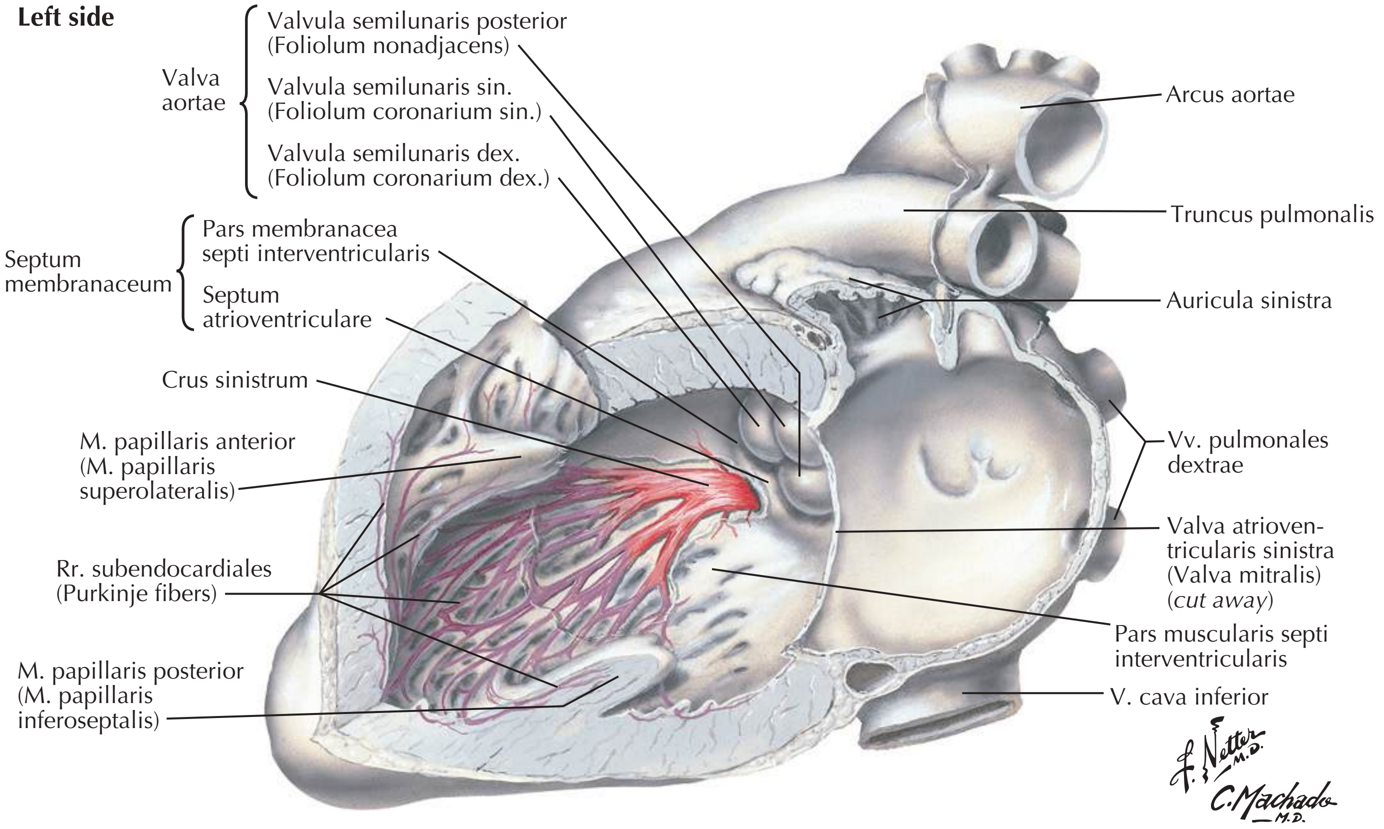
Valva atrioventricularis sinistra (Valva mitralis)


Truncus pulmonalis
Valva atrioventricularis sinistra (Valva mitralis)
Cuspis posterior (Foliolum murale)
Cuspis anterior (Foliolum aorticum)
Cuspis anterior valvae atrioventricularis sin. (Foliolum aorticum)
Ostia aa. coronariarum
Aorta ascendens
Atrium sinistrum
V. pulmonalis dextra superior
Auricula sinistra (atrial appendage)
Valvula semilunaris sin. (Foliolum coronarium sin.)
Valvula semilunaris dex. (Foliolum coronarium dex.)
Valva aortae
Aorta ascendens
Vv. pulmonales sinistrae
Valva aortae
Valvula semilunaris sin. (Foliolum coronarium sin.)
Valvula semilunaris posterior (Foliolum nonadjacens)
Auricula dextra (atrial appendage)
Crista supraventricularis
V. cava superior
Septum membranaceum
Septum atrioventriculare
Pars membranacea septi interventricularis
Outflow to Truncus pulmonalis
Ventriculus dexter
M. papillaris anterior (cut)
Atrium dextrum
Trabecula septomarginalis
M. papillaris septalis
Valva atrioventricularis dextra (Valva tricuspidalis)
Cuspis anterior (Foliolum anterosuperius)
Cuspis septalis (Foliolum septale)
Cuspis posterior (Foliolum inferius)
Ventriculus sinister
Ventriculus dexter
M. papillaris posterior (M. papillaris inferoseptalis)
M. papillaris anterior (cut)
M. papillaris anterior (M. papillaris superolateralis)
M. papillaris posterior (M. papillaris inferior)
Pars muscularis septi interventricularis
Ventriculus sinister
Plane of section



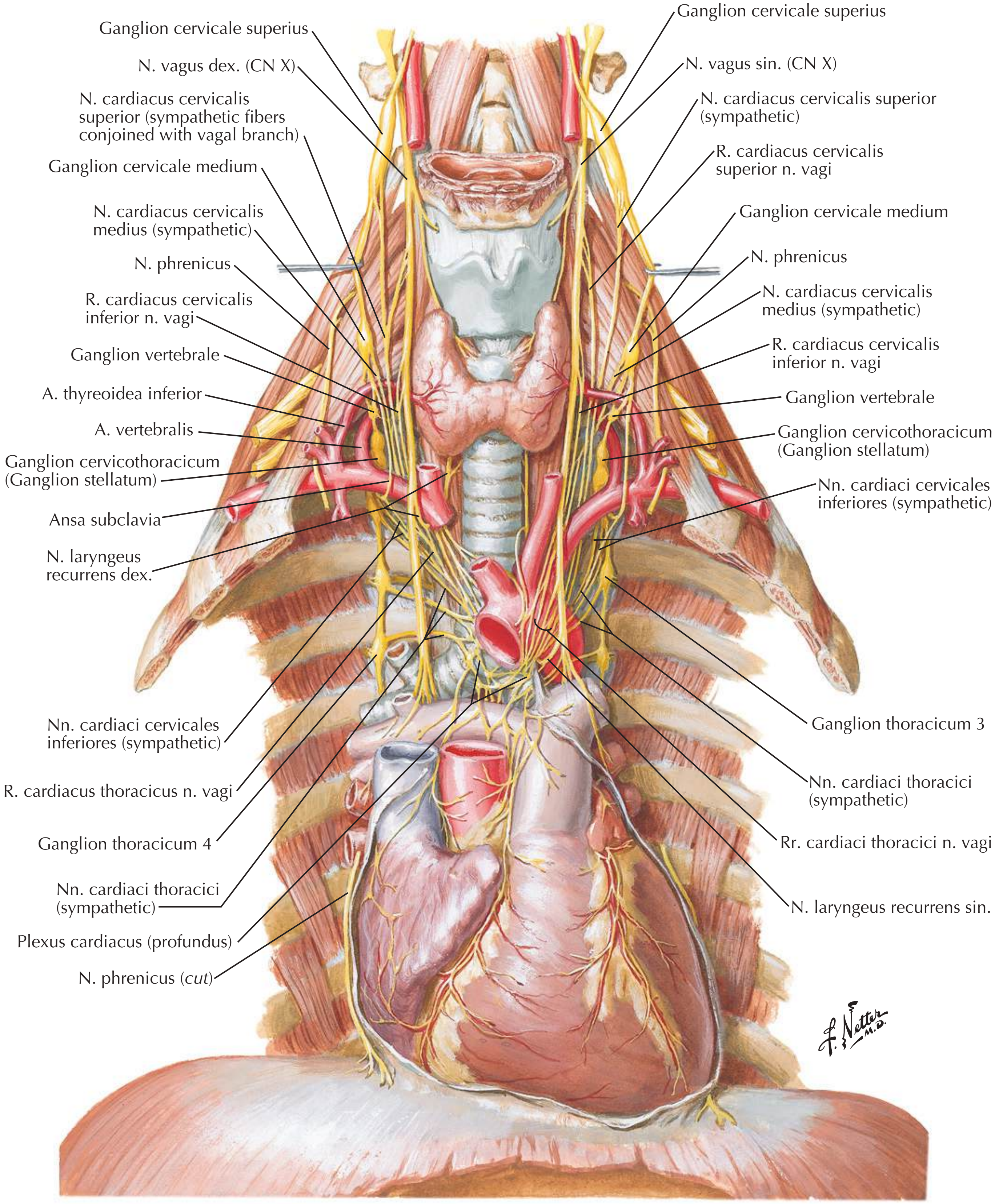
Right side

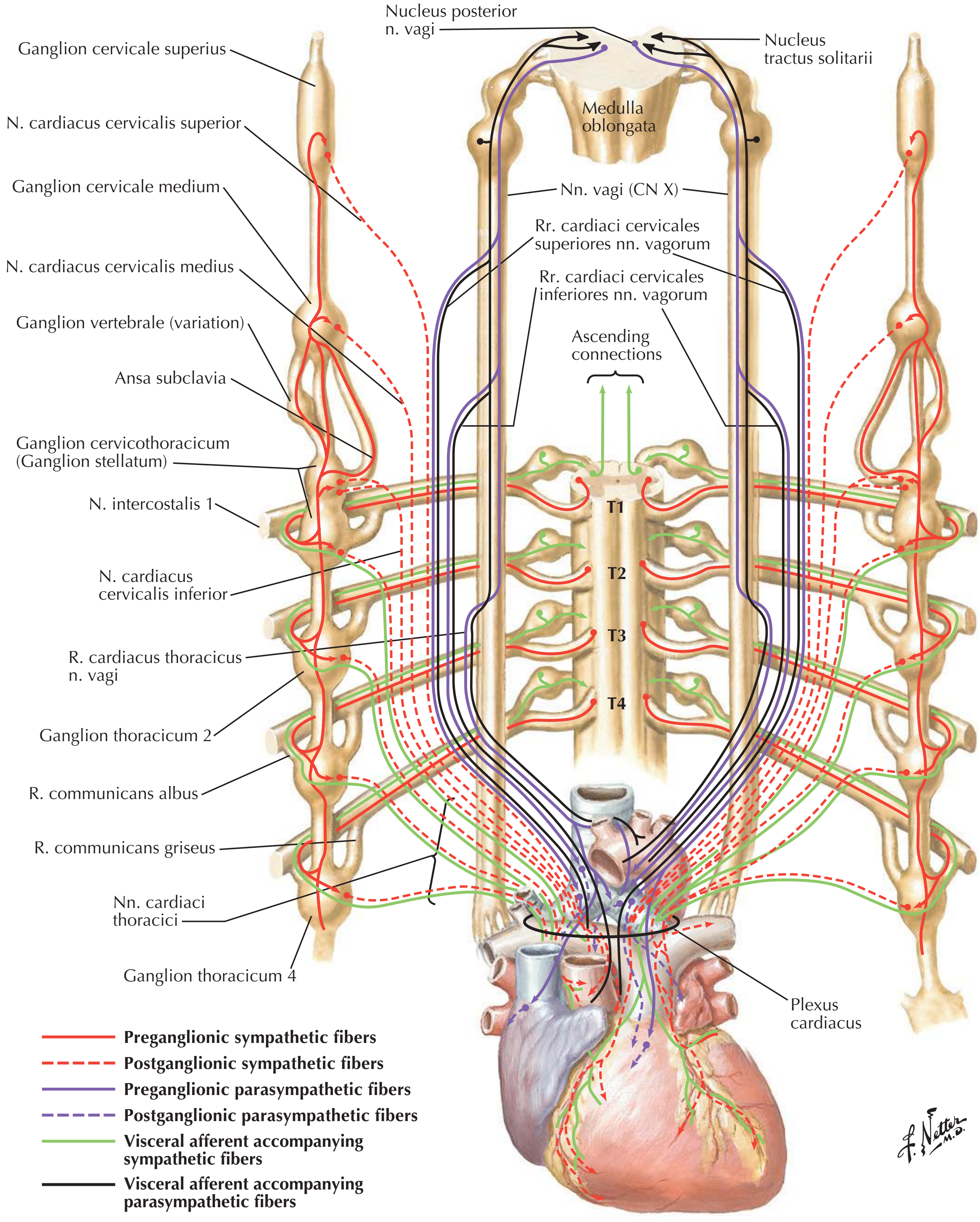
Aorta ascendens
V. cava superior
Septum atrioventriculare
Pars membranacea septi interventricularis
Septum membranaceum
R. nodi sinuatrialis (SA nodal branch)
Valva trunci pulmonalis
Nodus atrioventricularis (AV node)
Nodus sinuatrialis (SA node)
Fasciculus atrioventricularis (Hisi)
Crista terminalis
Crus dextrum
Rr. subendocardiales (Purkinje fibers)
Trabecula septomarginalis
M. papillaris anterior
Anulus fibrosus dexter (valvae atrioventricularis dextrae)
V. cava inferior
Rr. subendocardiales (Purkinje fibers)

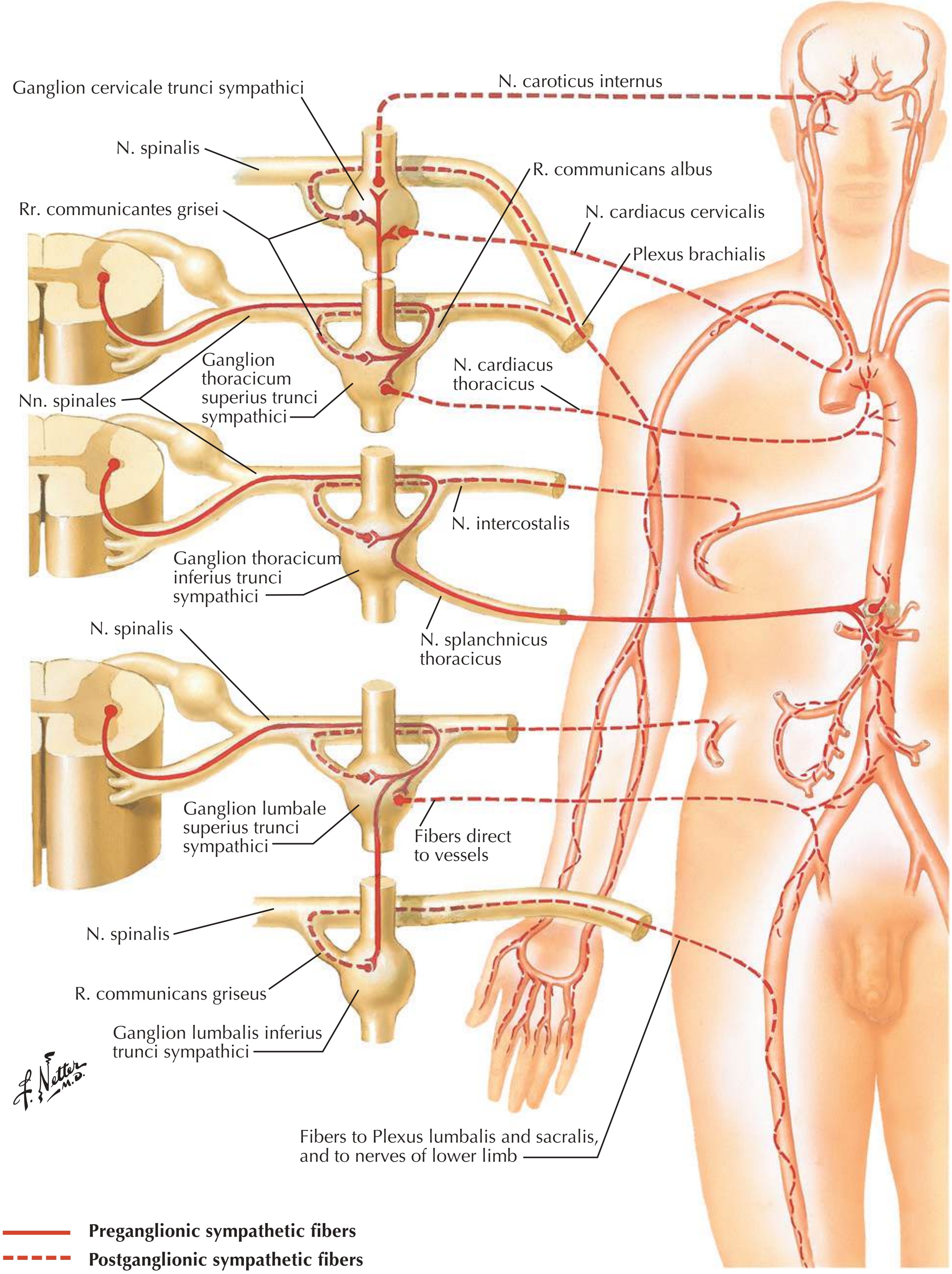


Left side

Valva aortae
Valvula semilunaris posterior (Foliolum nonadjacens)
Valvula semilunaris sin. (Foliolum coronarium sin.)
Valvula semilunaris dex. (Foliolum coronarium dex.)
Arcus aortae
Truncus pulmonalis
Septum membranaceum
Pars membranacea septi interventricularis
Septum atrioventriculare
Auricula sinistra
Crus sinistrum
M. papillaris anterior (M. papillaris superolateralis)
Vv. pulmonales dextrae
Valva atrioventricularis sinistra (Valva mitralis) (*cut away*)
Rr. subendocardiales (Purkinje fibers)
Pars muscularis septi interventricularis
M. papillaris posterior (M. papillaris inferoseptalis)
V. cava inferior
F. Netter M.D.
C. Machado M.D.

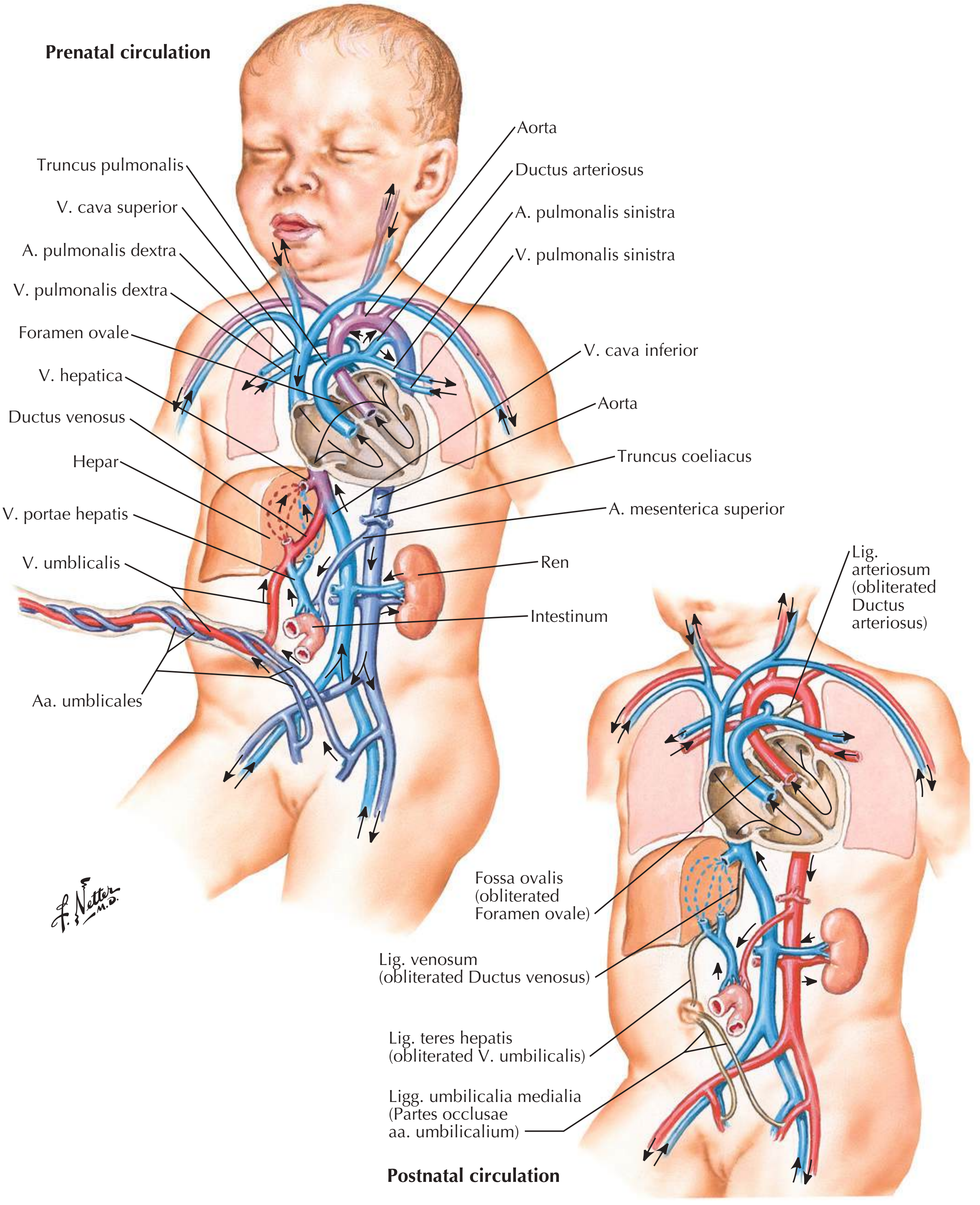

Ganglion cervicale superius
N. vagus dex. (CN X)
N. cardiacus cervicalis superior (sympathetic fibers conjoined with vagal branch)
Ganglion cervicale medium
N. cardiacus cervicalis medius (sympathetic)
N. phrenicus
R. cardiacus cervicalis inferior n. vagi
Ganglion vertebrale
A. thyreoidea inferior
A. vertebralis
Ganglion cervicothoracicum (Ganglion stellatum)
Ansa subclavia
N. laryngeus recurrens dex.
Nn. cardiaci cervicales inferiores (sympathetic)
R. cardiacus thoracicus n. vagi
Ganglion thoracicum 4
Nn. cardiaci thoracici (sympathetic)
Plexus cardiacus (profundus)
N. phrenicus (cut)
Ganglion cervicale superius
N. vagus sin. (CN X)
N. cardiacus cervicalis superior (sympathetic)
R. cardiacus cervicalis superior n. vagi
Ganglion cervicale medium
N. phrenicus
N. cardiacus cervicalis medius (sympathetic)
R. cardiacus cervicalis inferior n. vagi
Ganglion vertebrale
Ganglion cervicothoracicum (Ganglion stellatum)
Nn. cardiaci cervicales inferiores (sympathetic)
Ganglion thoracicum 3
Nn. cardiaci thoracici (sympathetic)
Rr. cardiaci thoracici n. vagi
N. laryngeus recurrens sin.
F. Netter M.D.


Nucleus posterior n. vagi
Nucleus tractus solitarii
Medulla oblongata
Ganglion cervicale superius
N. cardiacus cervicalis superior
Ganglion cervicale medium
N. cardiacus cervicalis medius
Ganglion vertebrale (variation)
Ansa subclavia
Ganglion cervicothoracicum (Ganglion stellatum)
N. intercostalis 1
N. cardiacus cervicalis inferior
R. cardiacus thoracicus n. vagi
Ganglion thoracicum 2
R. communicans albus
R. communicans griseus
Nn. cardiaci thoracici
Ganglion thoracicum 4
Nn. vagi (CN X)
Rr. cardiaci cervicales superiores nn. vagorum
Rr. cardiaci cervicales inferiores nn. vagorum
Ascending connections
T1
T2
T3
T4
Plexus cardiacus
Preganglionic sympathetic fibers
Postganglionic sympathetic fibers
Preganglionic parasympathetic fibers
Postganglionic parasympathetic fibers
Visceral afferent accompanying sympathetic fibers
Visceral afferent accompanying parasympathetic fibers
F. Netter M.D.


Ganglion cervicale trunci sympathici
N. caroticus internus
N. spinalis
R. communicans albus
Rr. communicantes grisei
N. cardiacus cervicalis
Plexus brachialis
Ganglion thoracicum superius trunci sympathici
N. cardiacus thoracicus
Nn. spinales
N. intercostalis
Ganglion thoracicum inferius trunci sympathici
N. spinalis
N. splanchnicus thoracicus
Ganglion lumbale superius trunci sympathici
Fibers direct to vessels
N. spinalis
R. communicans griseus
Ganglion lumbalis inferius trunci sympathici
Fibers to Plexus lumbalis and sacralis, and to nerves of lower limb

— **Preganglionic sympathetic fibers**

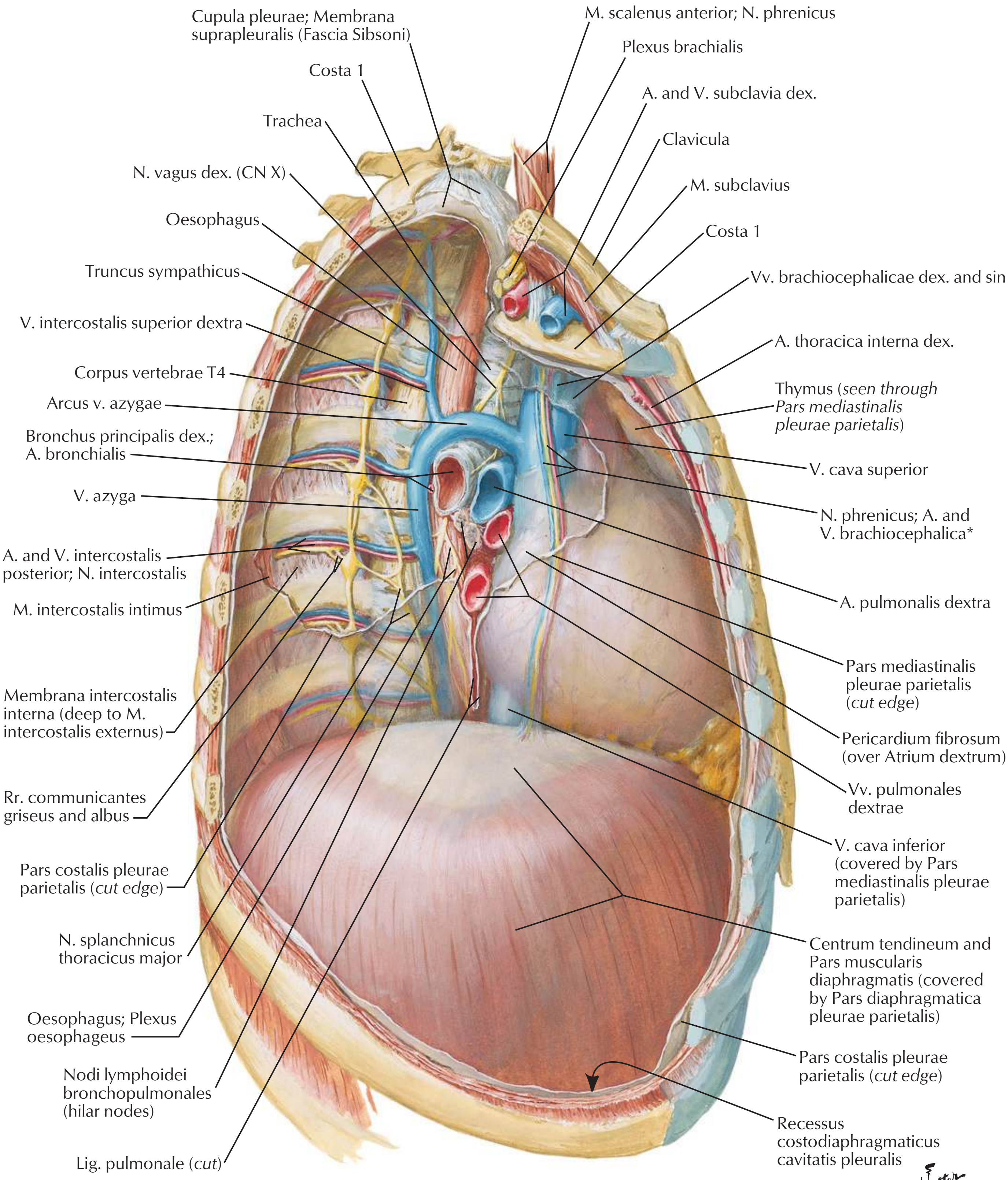
- - - - **Postganglionic sympathetic fibers**



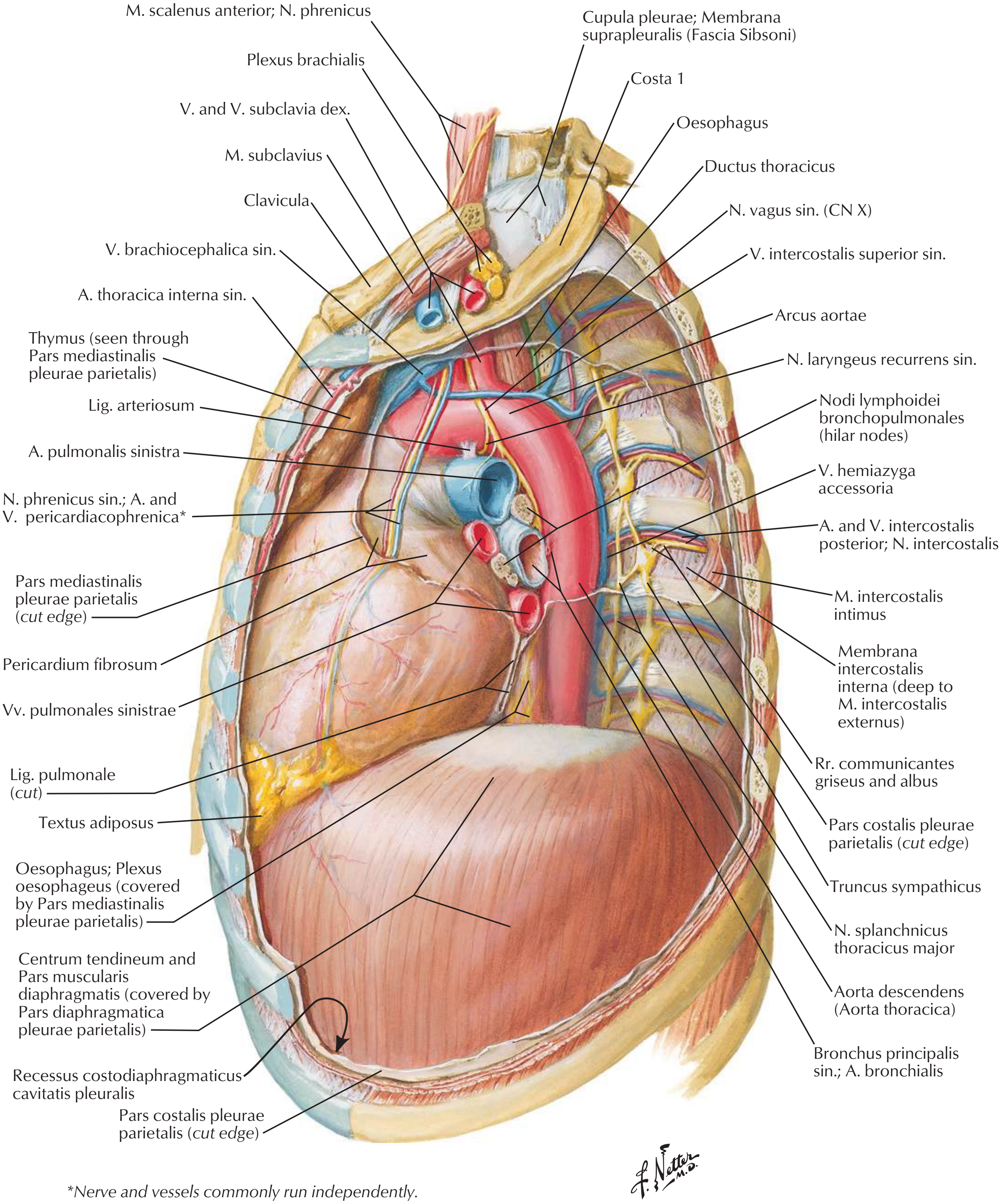
Prenatal circulation

Truncus pulmonalis
V. cava superior
A. pulmonalis dextra
V. pulmonalis dextra
Foramen ovale
V. hepatica
Ductus venosus
Hepar
V. portae hepatis
V. umblicalis
Aa. umblicales
Aorta
Ductus arteriosus
A. pulmonalis sinistra
V. pulmonalis sinistra
V. cava inferior
Aorta
Truncus coeliacus
A. mesenterica superior
Ren
Intestinum
F. Netter M.D.
Lig. arteriosum (obliterated Ductus arteriosus)
Fossa ovalis (obliterated Foramen ovale)
Lig. venosum (obliterated Ductus venosus)
Lig. teres hepatis (obliterated V. umbilicalis)
Ligg. umbilicalia medialia (Partes occlusae aa. umbilicalium)

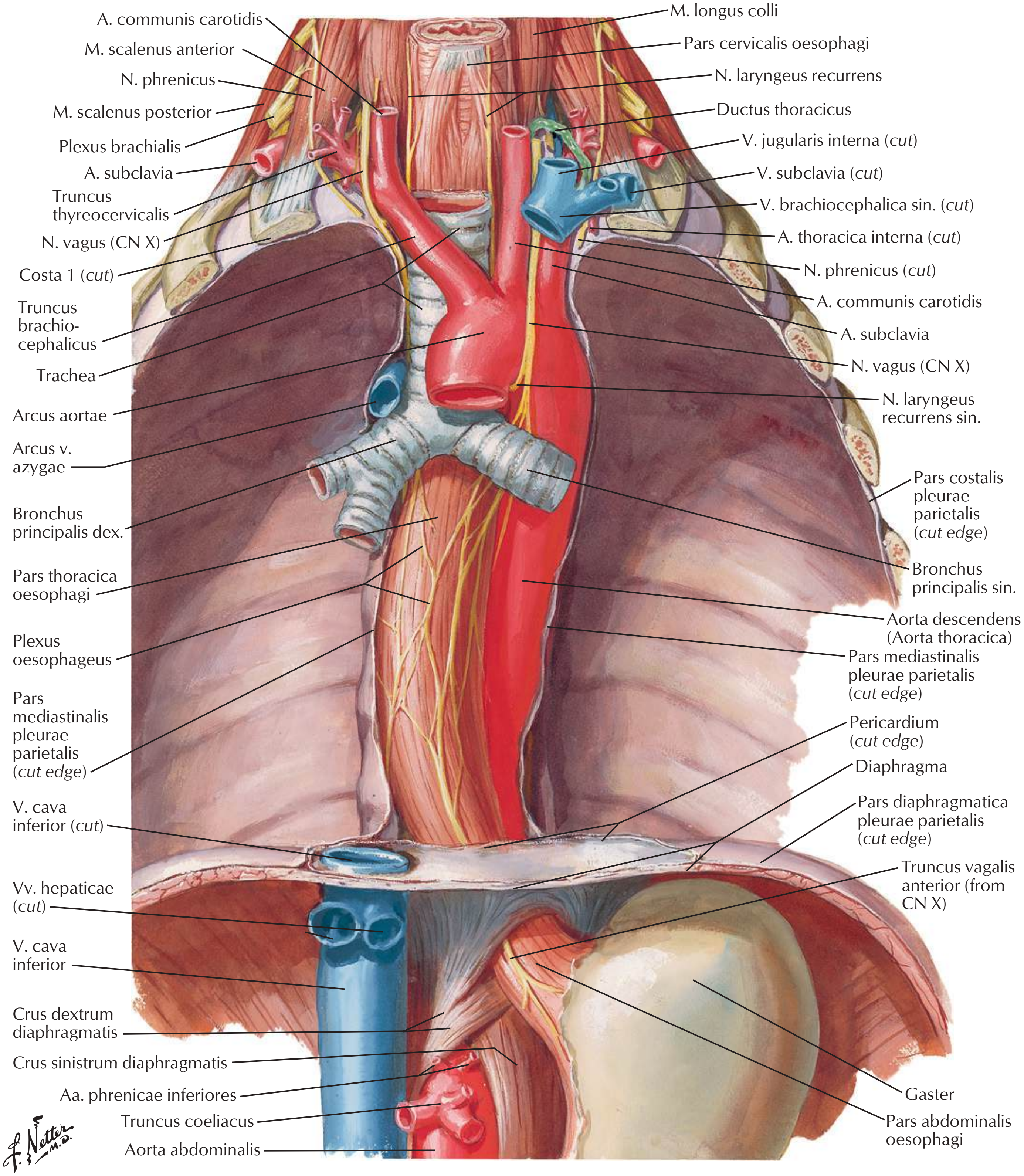
Postnatal circulation

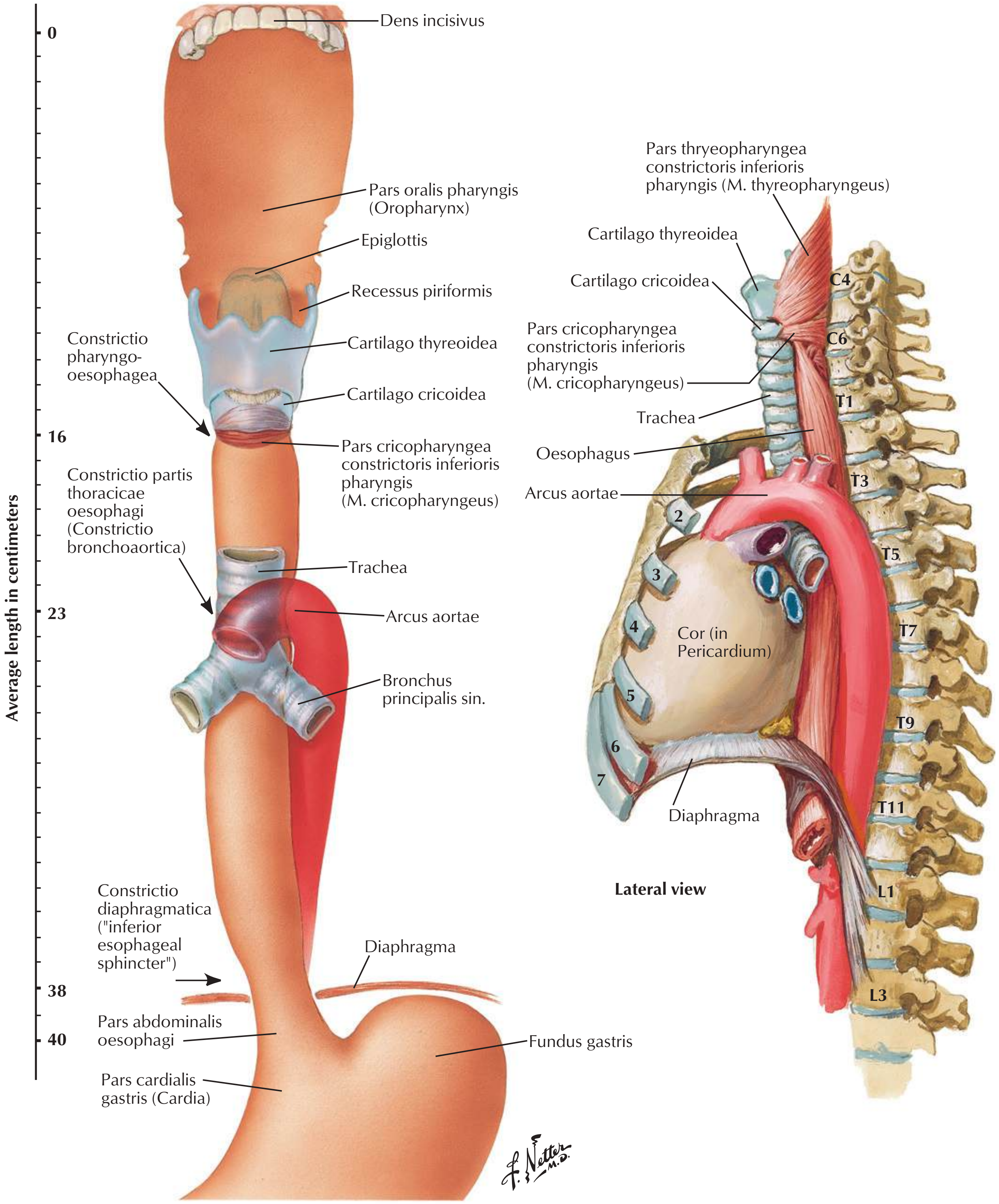

Cupula pleurae; Membrana suprapleuralis (Fascia Sibsoni)
Costa 1
Trachea
N. vagus dex. (CN X)
Oesophagus
Truncus sympathicus
V. intercostalis superior dextra
Corpus vertebrae T4
Arcus v. azygae
Bronchus principalis dex.; A. bronchialis
V. azyga
A. and V. intercostalis posterior; N. intercostalis
M. intercostalis intimus
Membrana intercostalis interna (deep to M. intercostalis externus)
Rr. communicantes griseus and albus
Pars costalis pleurae parietalis (*cut edge*)
N. splanchnicus thoracicus major
Oesophagus; Plexus oesophageus
Nodi lymphoidei bronchopulmonales (hilar nodes)
Lig. pulmonale (*cut*)
M. scalenus anterior; N. phrenicus
Plexus brachialis
A. and V. subclavia dex.
Clavicula
M. subclavius
Costa 1
Vv. brachiocephalicae dex. and sin
A. thoracica interna dex.
Thymus (*seen through Pars mediastinalis pleurae parietalis*)
V. cava superior
N. phrenicus; A. and V. brachiocephalica*
A. pulmonalis dextra
Pars mediastinalis pleurae parietalis (*cut edge*)
Pericardium fibrosum (over Atrium dextrum)
Vv. pulmonales dextrae
V. cava inferior (covered by Pars mediastinalis pleurae parietalis)
Centrum tendineum and Pars muscularis diaphragmatis (covered by Pars diaphragmatica pleurae parietalis)
Pars costalis pleurae parietalis (*cut edge*)
Recessus costodiaphragmaticus cavitatis pleuralis

*Nerve and vessels commonly run independently.


M. scalenus anterior; N. phrenicus
Plexus brachialis
V. and V. subclavia dex.
M. subclavius
Clavicula
V. brachiocephalica sin.
A. thoracica interna sin.
Thymus (seen through Pars mediastinalis pleurae parietalis)
Lig. arteriosum
A. pulmonalis sinistra
N. phrenicus sin.; A. and V. pericardiacophrenica*
Pars mediastinalis pleurae parietalis (*cut edge*)
Pericardium fibrosum
Vv. pulmonales sinistrae
Lig. pulmonale (*cut*)
Textus adiposus
Oesophagus; Plexus oesophageus (covered by Pars mediastinalis pleurae parietalis)
Centrum tendineum and Pars muscularis diaphragmatis (covered by Pars diaphragmatica pleurae parietalis)
Recessus costodiaphragmaticus cavitatis pleuralis
Pars costalis pleurae parietalis (*cut edge*)
Cupula pleurae; Membrana suprapleuralis (Fascia Sibsoni)
Costa 1
Oesophagus
Ductus thoracicus
N. vagus sin. (CN X)
V. intercostalis superior sin.
Arcus aortae
N. laryngeus recurrens sin.
Nodi lymphoidei bronchopulmonales (hilar nodes)
V. hemiazyga accessoria
A. and V. intercostalis posterior; N. intercostalis
M. intercostalis intimus
Membrana intercostalis interna (deep to M. intercostalis externus)
Rr. communicantes griseus and albus
Pars costalis pleurae parietalis (*cut edge*)
Truncus sympathicus
N. splanchnicus thoracicus major
Aorta descendens (Aorta thoracica)
Bronchus principalis sin.; A. bronchialis
F. Netter M.D.

*Nerve and vessels commonly run independently.

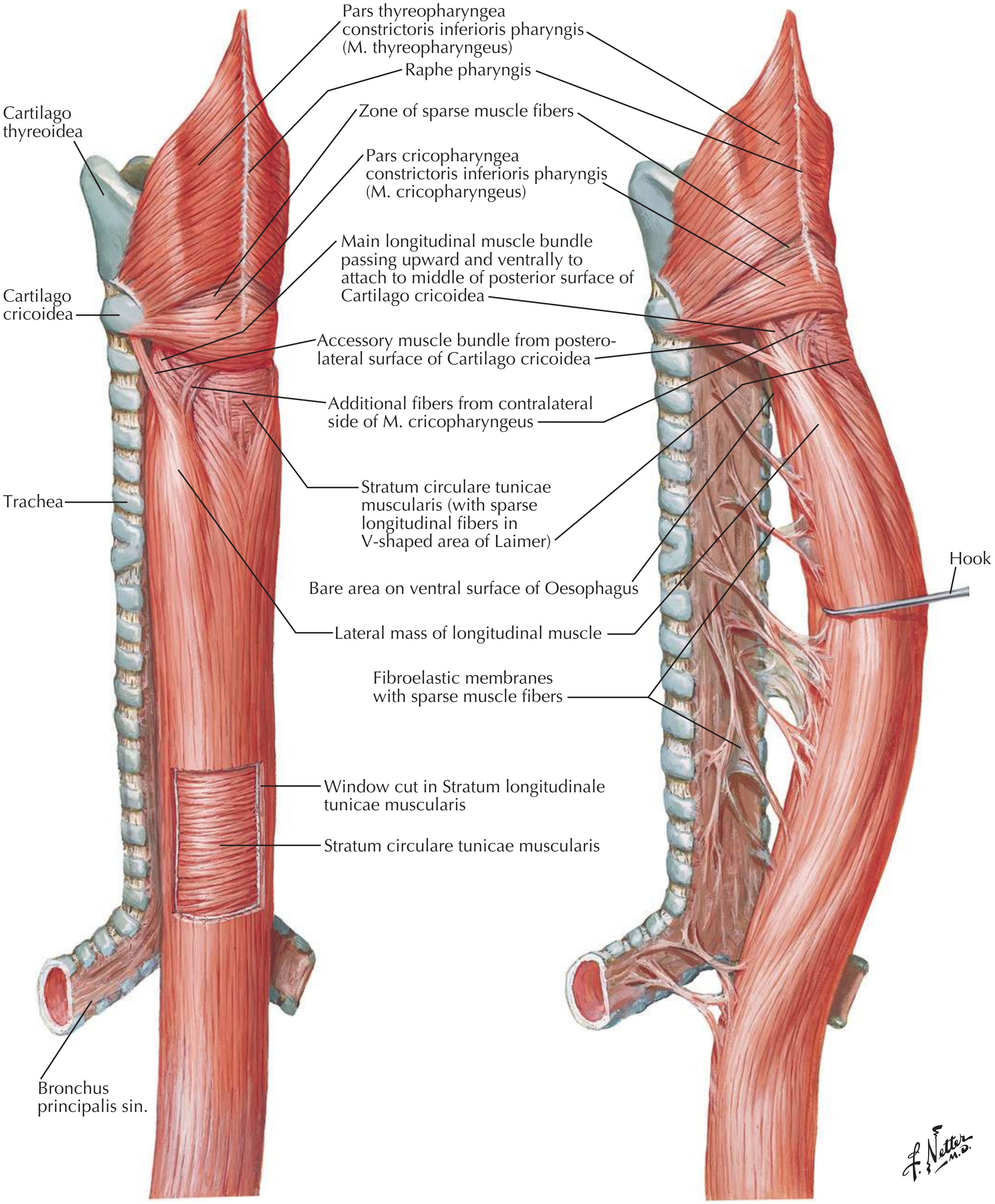

A. communis carotidis
M. scalenus anterior
N. phrenicus
M. scalenus posterior
Plexus brachialis
A. subclavia
Truncus thyreocervicalis
N. vagus (CN X)
Costa 1 (*cut*)
Truncus brachio-cephalicus
Trachea
Arcus aortae
Arcus v. azygae
Bronchus principalis dex.
Pars thoracica oesophagi
Plexus oesophageus
Pars mediastinalis pleurae parietalis (*cut edge*)
V. cava inferior (*cut*)
Vv. hepaticae (*cut*)
V. cava inferior
Crus dextrum diaphragmatis
Crus sinistrum diaphragmatis
Aa. phrenicae inferiores
Truncus coeliacus
Aorta abdominalis
M. longus colli
Pars cervicalis oesophagi
N. laryngeus recurrens
Ductus thoracicus
V. jugularis interna (*cut*)
V. subclavia (*cut*)
V. brachiocephalica sin. (*cut*)
A. thoracica interna (*cut*)
N. phrenicus (*cut*)
A. communis carotidis
A. subclavia
N. vagus (CN X)
N. laryngeus recurrens sin.
Pars costalis pleurae parietalis (*cut edge*)
Bronchus principalis sin.
Aorta descendens (Aorta thoracica)
Pars mediastinalis pleurae parietalis (*cut edge*)
Pericardium (*cut edge*)
Diaphragma
Pars diaphragmatica pleurae parietalis (*cut edge*)
Truncus vagalis anterior (from CN X)
Gaster
Pars abdominalis oesophagi


0
16
23
38
40
Average length in centimeters
Dens incisivus
Pars oralis pharyngis (Oropharynx)
Epiglottis
Recessus piriformis
Cartilago thyreoidea
Cartilago cricoidea
Constrictio pharyngo-oesophagea
Pars cricopharyngea constrictoris inferioris pharyngis (M. cricopharyngeus)
Constrictio partis thoracicae oesophagi (Constrictio bronchoaortica)
Trachea
Arcus aortae
Bronchus principalis sin.
Constrictio diaphragmatica ("inferior esophageal sphincter")
Diaphragma
Pars abdominalis oesophagi
Pars cardialis gastris (Cardia)
Fundus gastris
Pars thryeopharyngea constrictoris inferioris pharyngis (M. thyreopharyngeus)
Cartilago thyreoidea
Cartilago cricoidea
Pars cricopharyngea constrictoris inferioris pharyngis (M. cricopharyngeus)
Trachea
Oesophagus
Arcus aortae
Cor (in Pericardium)
Diaphragma
C4
C6
T1
T3
T5
T7
T9
T11
L1
L3
2
3
4
5
6
7
F. Netter M.D.

Lateral view

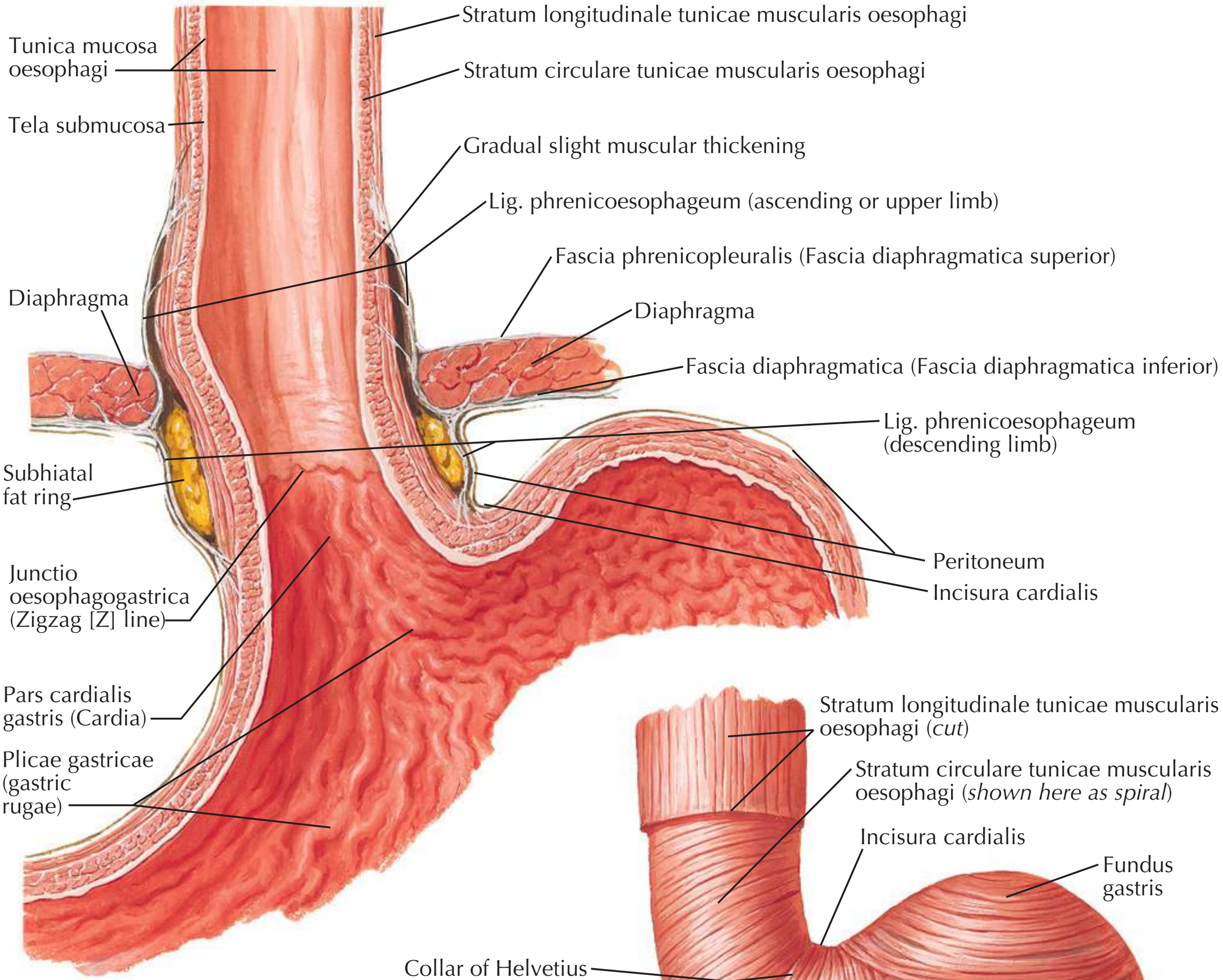
Musculature of Esophagus

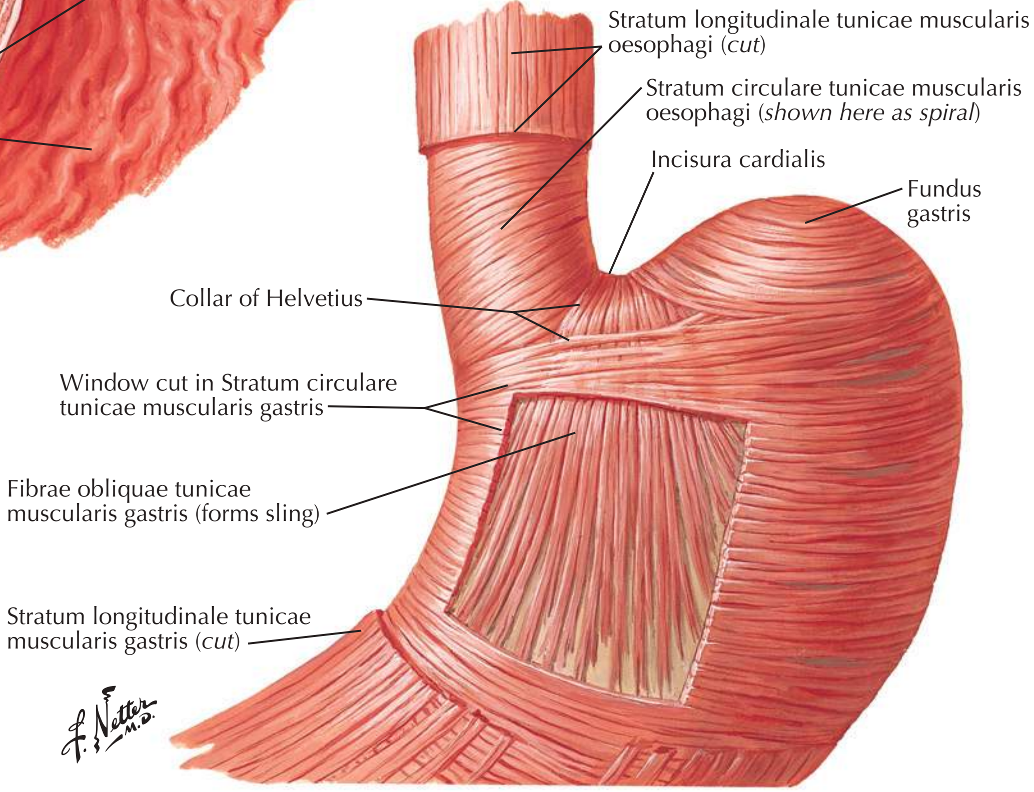
See also Plates 75, 81



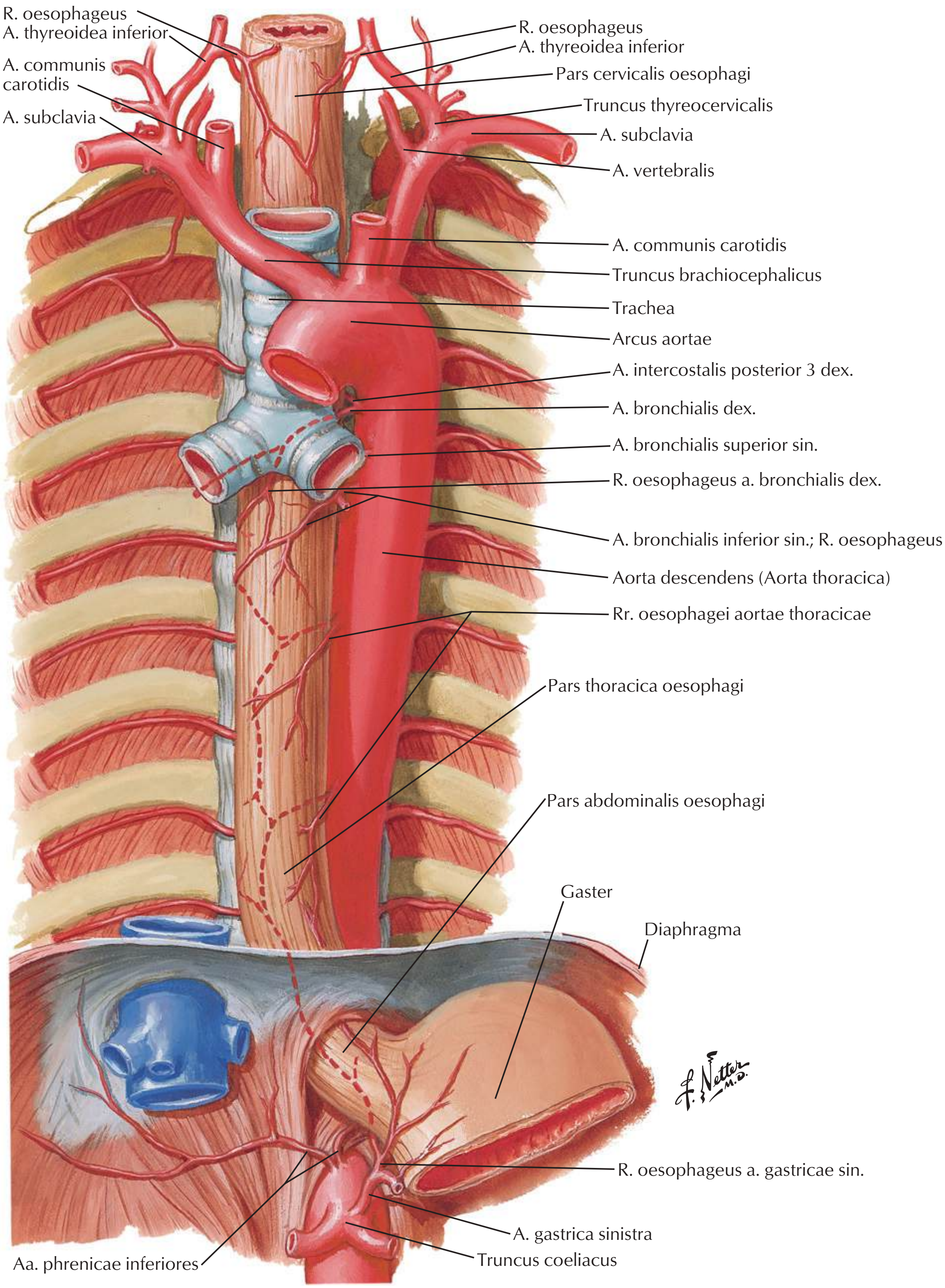
Pars thyreopharyngea constrictoris inferioris pharyngis (M. thyreopharyngeus)
Raphe pharyngis
Cartilago thyreoidea
Zone of sparse muscle fibers
Pars cricopharyngea constrictoris inferioris pharyngis (M. cricopharyngeus)
Main longitudinal muscle bundle passing upward and ventrally to attach to middle of posterior surface of Cartilago cricoidea
Cartilago cricoidea
Accessory muscle bundle from postero-lateral surface of Cartilago cricoidea
Additional fibers from contralateral side of M. cricopharyngeus
Stratum circulare tunicae muscularis (with sparse longitudinal fibers in V-shaped area of Laimer)
Trachea
Hook
Bare area on ventral surface of Oesophagus
Lateral mass of longitudinal muscle
Fibroelastic membranes with sparse muscle fibers
Window cut in Stratum longitudinale tunicae muscularis
Stratum circulare tunicae muscularis
Bronchus principalis sin.

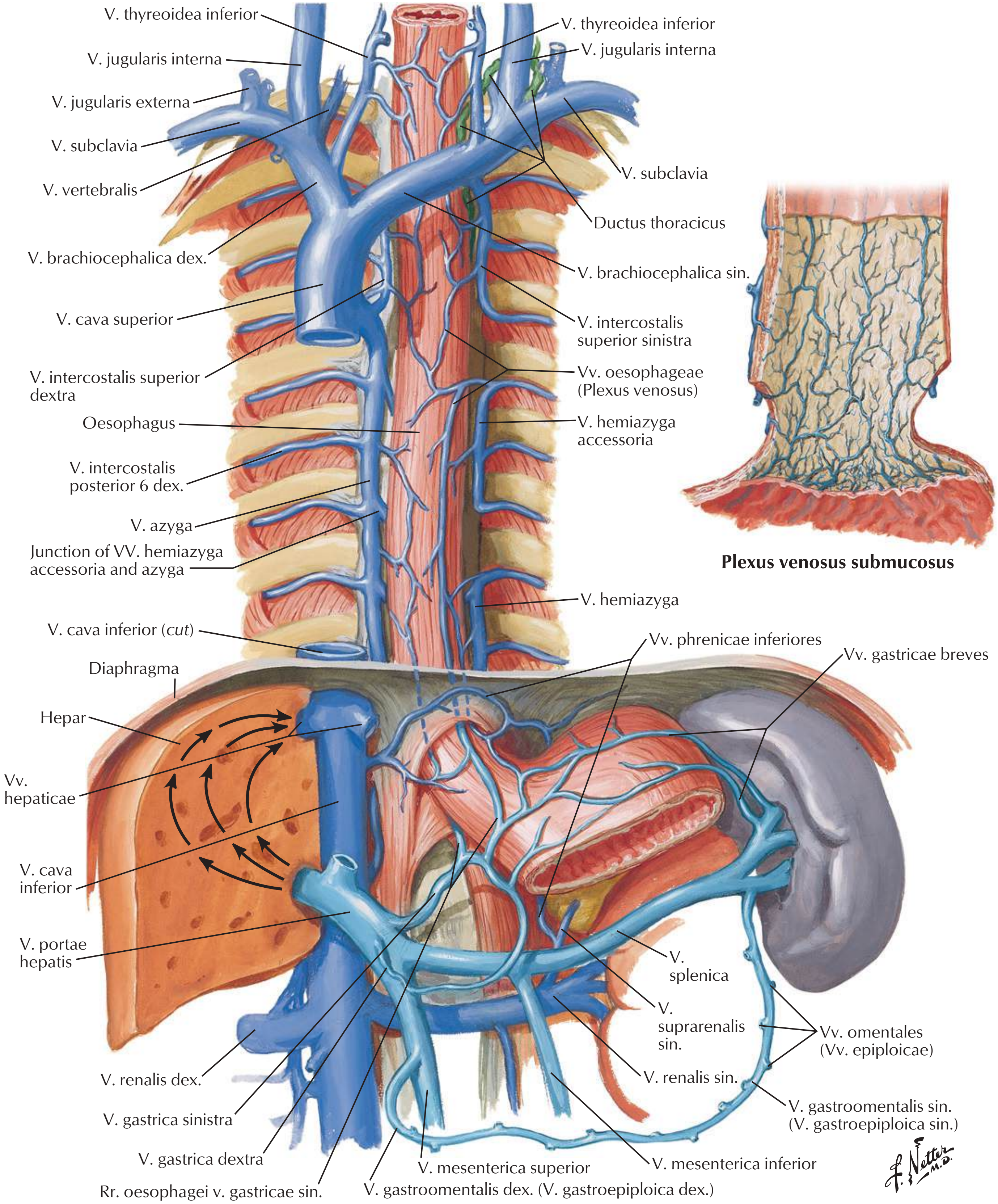
Posterolateral view


Tunica mucosa oesophagi
Tela submucosa
Diaphragma
Subhiatal fat ring
Junctio oesophagogastrica (Zigzag [Z] line)
Pars cardialis gastris (Cardia)
Plicae gastricae (gastric rugae)
Stratum longitudinale tunicae muscularis oesophagi
Stratum circulare tunicae muscularis oesophagi
Gradual slight muscular thickening
Lig. phrenicoesophageum (ascending or upper limb)
Fascia phrenicopleuralis (Fascia diaphragmatica superior)
Diaphragma
Fascia diaphragmatica (Fascia diaphragmatica inferior)
Lig. phrenicoesophageum (descending limb)
Peritoneum
Incisura cardialis


Stratum longitudinale tunicae muscularis oesophagi (*cut*)
Stratum circulare tunicae muscularis oesophagi (*shown here as spiral*)
Incisura cardialis
Fundus gastris
Collar of Helvetius
Window cut in Stratum circulare tunicae muscularis gastris
Fibrae obliquae tunicae muscularis gastris (forms sling)
Stratum longitudinale tunicae muscularis gastris (*cut*)
F. Netter M.D.

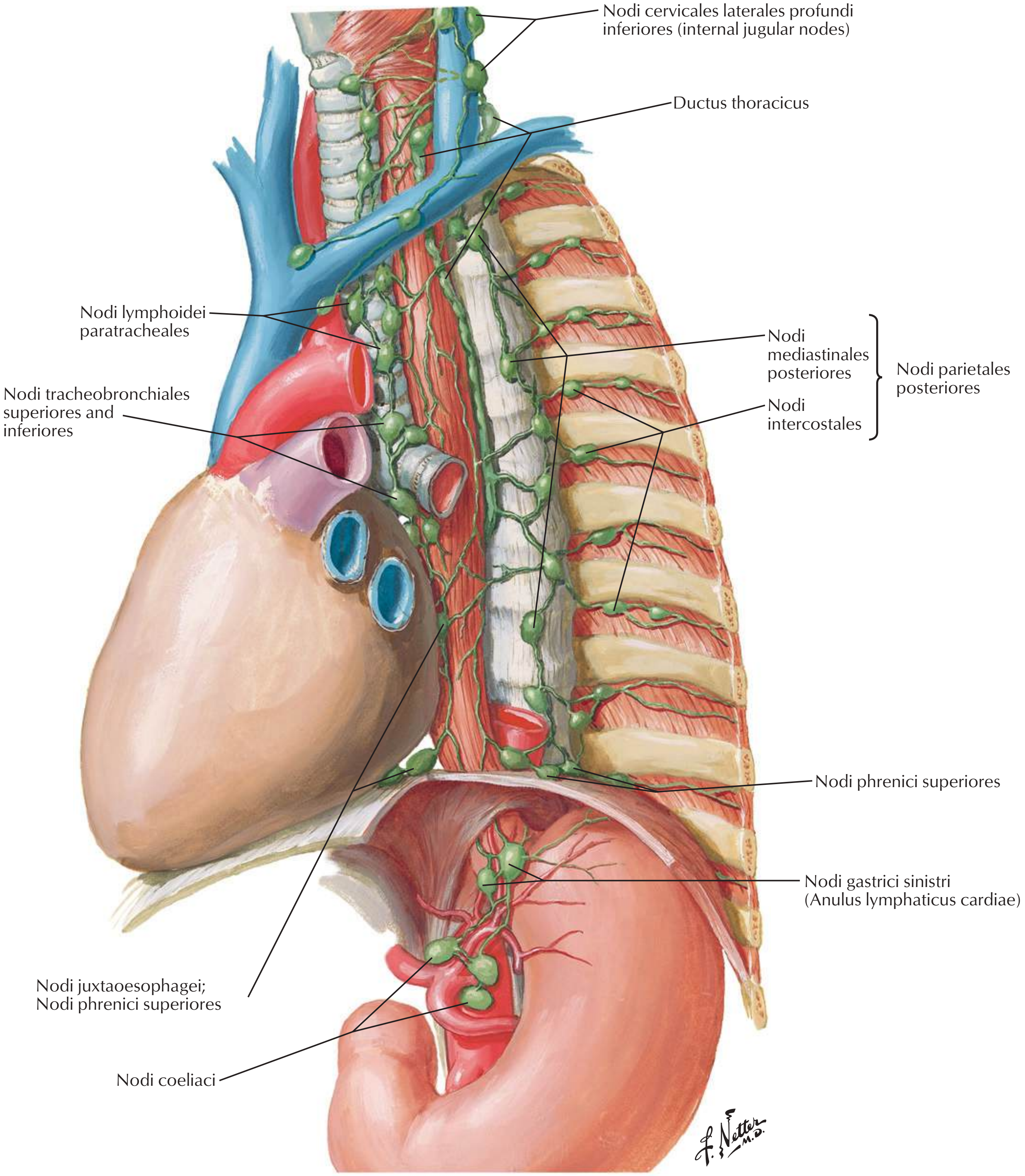
See also Plates 211, 291

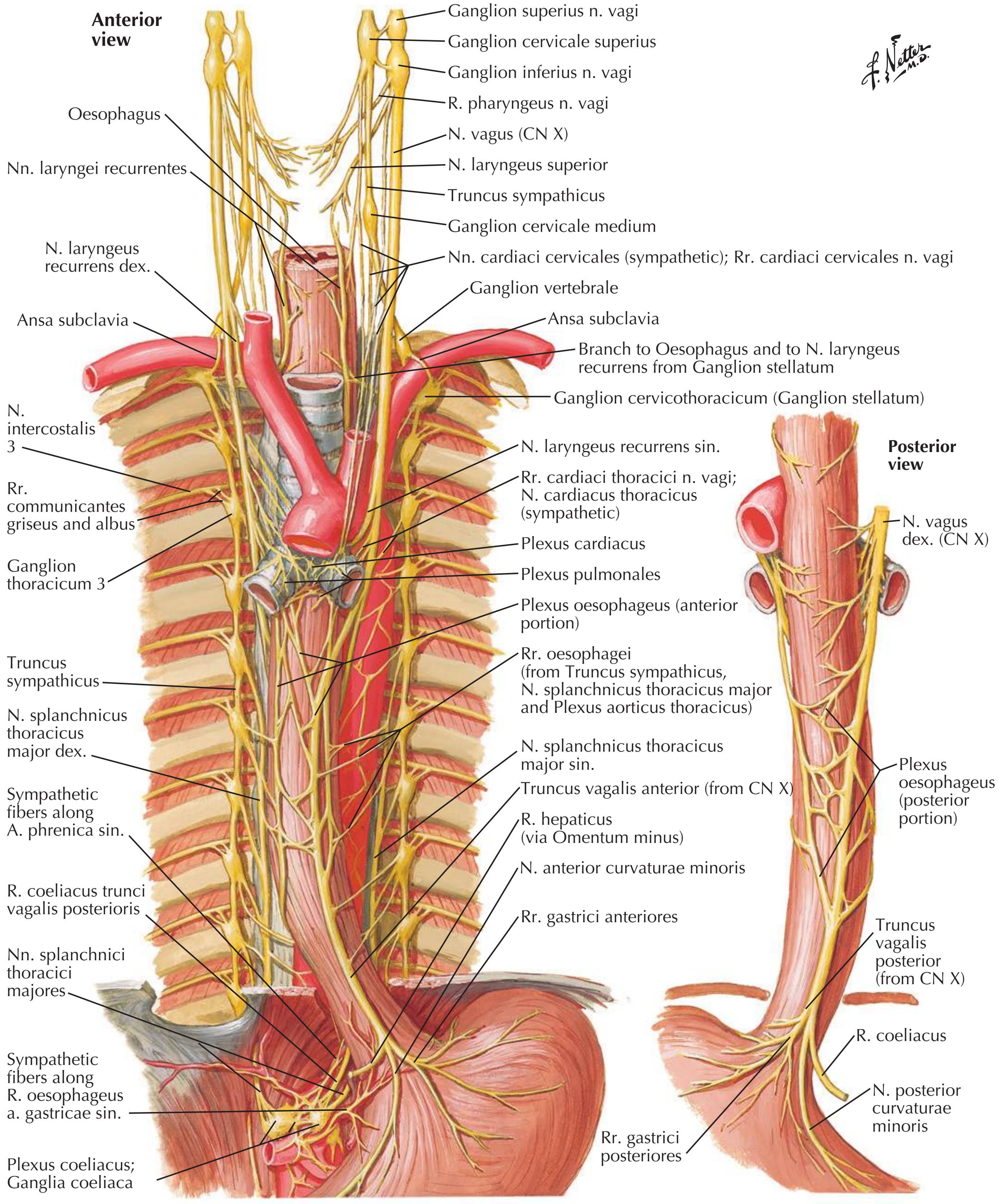

R. oesophageus
A. thyreoidea inferior
A. communis carotidis
A. subclavia
R. oesophageus
A. thyreoidea inferior
Pars cervicalis oesophagi
Truncus thyreocervicalis
A. subclavia
A. vertebralis
A. communis carotidis
Truncus brachiocephalicus
Trachea
Arcus aortae
A. intercostalis posterior 3 dex.
A. bronchialis dex.
A. bronchialis superior sin.
R. oesophageus a. bronchialis dex.
A. bronchialis inferior sin.; R. oesophageus
Aorta descendens (Aorta thoracica)
Rr. oesophagei aortae thoracicae
Pars thoracica oesophagi
Pars abdominalis oesophagi
Gaster
Diaphragma
R. oesophageus a. gastricae sin.
A. gastrica sinistra
Truncus coeliacus
Aa. phrenicae inferiores


V. thyreoidea inferior
V. jugularis interna
V. jugularis externa
V. subclavia
V. vertebralis
V. brachiocephalica dex.
V. cava superior
V. intercostalis superior dextra
Oesophagus
V. intercostalis posterior 6 dex.
V. azyga
Junction of VV. hemiazyga accessoria and azyga
V. cava inferior (*cut*)
Diaphragma
Hepar
Vv. hepaticae
V. cava inferior
V. portae hepatis
V. renalis dex.
V. gastrica sinistra
V. gastrica dextra
Rr. oesophagei v. gastricae sin.
V. thyreoidea inferior
V. jugularis interna
V. subclavia
Ductus thoracicus
V. brachiocephalica sin.
V. intercostalis superior sinistra
Vv. oesophageae (Plexus venosus)
V. hemiazyga accessoria
Plexus venosus submucosus
V. hemiazyga
Vv. phrenicae inferiores
Vv. gastricae breves
V. splenica
V. suprarenalis sin.
Vv. omentales (Vv. epiploicae)
V. renalis sin.
V. gastroomentalis sin. (V. gastroepiploica sin.)
V. mesenterica inferior
V. mesenterica superior
V. gastroomentalis dex. (V. gastroepiploica dex.)
F. Netter M.D.

Lymph Vessels and Nodes of Esophagus

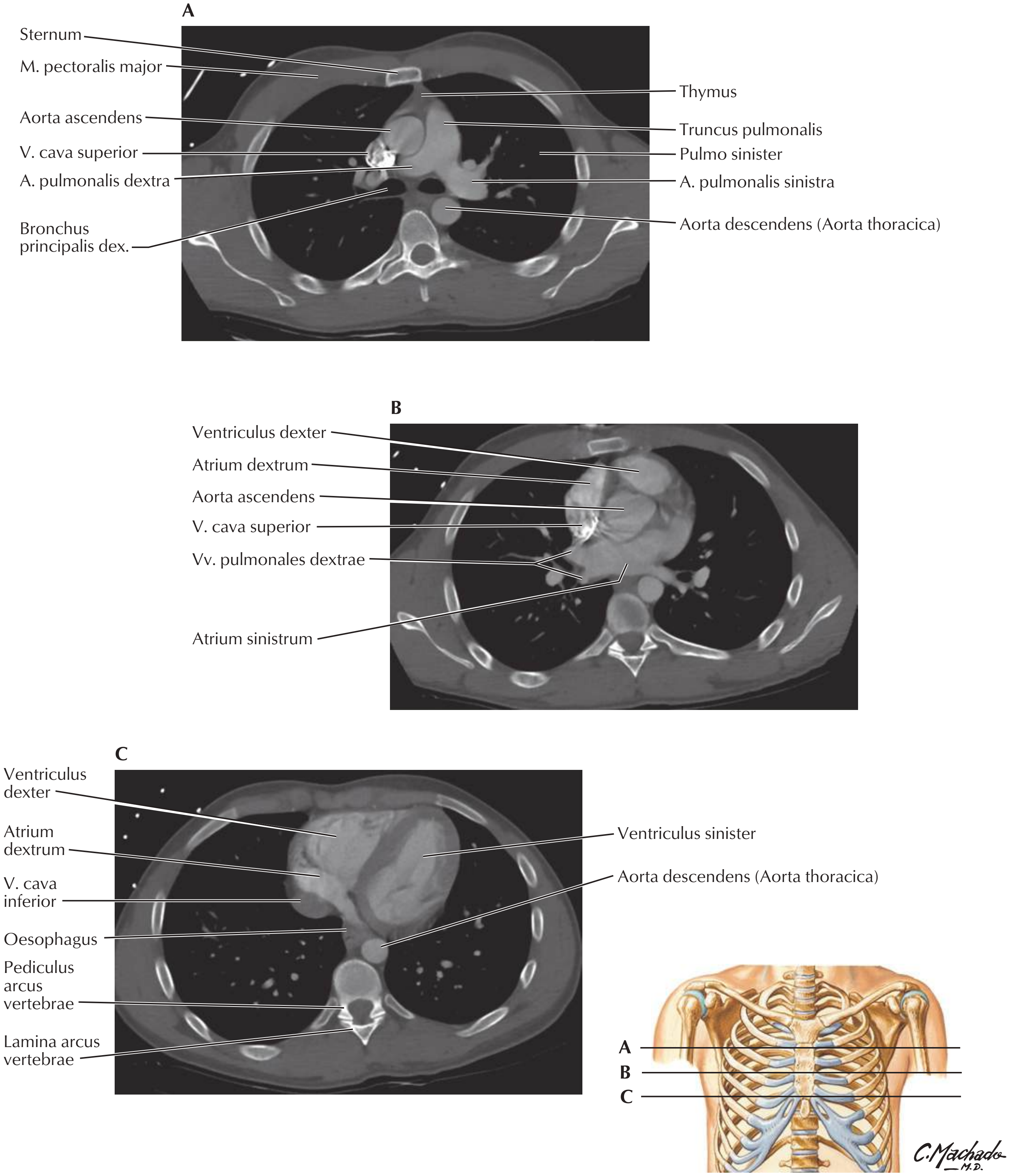
See also **Plate 212**

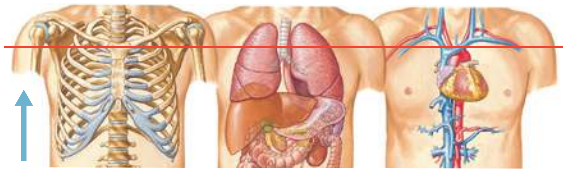

Nodi cervicales laterales profundi inferiores (internal jugular nodes)
Ductus thoracicus
Nodi lymphoidei paratracheales
Nodi tracheobronchiales superiores and inferiores
Nodi mediastinales posteriores
Nodi intercostales
Nodi parietales posteriores
Nodi phrenici superiores
Nodi gastrici sinistri (Anulus lymphaticus cardiae)
Nodi juxtaoesophagei; Nodi phrenici superiores
Nodi coeliaci

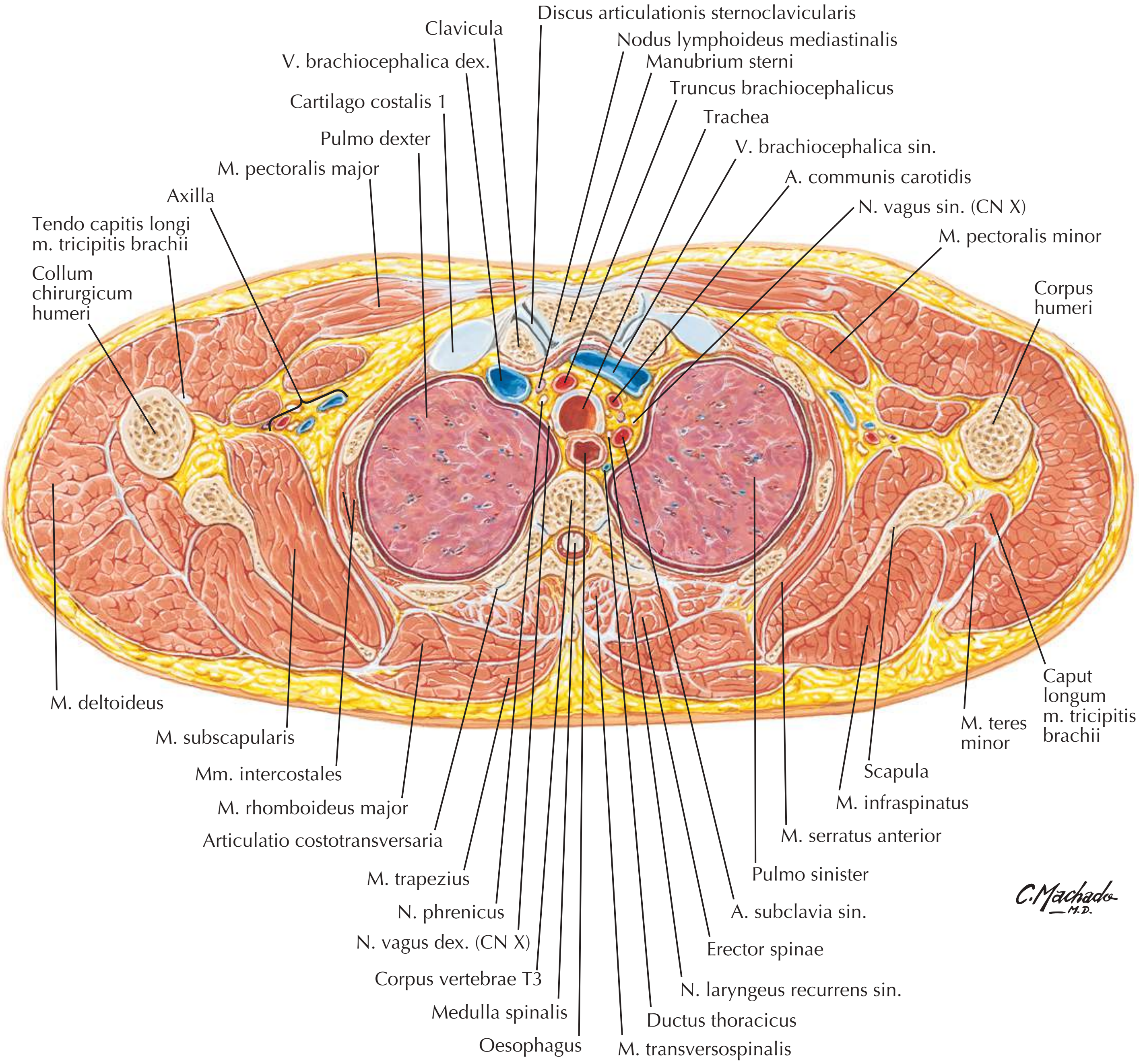

Anterior view
Ganglion superius n. vagi
Ganglion cervicale superius
Ganglion inferius n. vagi
R. pharyngeus n. vagi
N. vagus (CN X)
N. laryngeus superior
Truncus sympathicus
Ganglion cervicale medium
Nn. cardiaci cervicales (sympathetic); Rr. cardiaci cervicales n. vagi
Ganglion vertebrale
Ansa subclavia
Branch to Oesophagus and to N. laryngeus recurrens from Ganglion stellatum
Ganglion cervicothoracicum (Ganglion stellatum)
N. laryngeus recurrens sin.
Rr. cardiaci thoracici n. vagi; N. cardiacus thoracicus (sympathetic)
Plexus cardiacus
Plexus pulmonales
Plexus oesophageus (anterior portion)
Rr. oesophagei (from Truncus sympathicus, N. splanchnicus thoracicus major and Plexus aorticus thoracicus)
N. splanchnicus thoracicus major sin.
Truncus vagalis anterior (from CN X)
R. hepaticus (via Omentum minus)
N. anterior curvaturae minoris
Rr. gastrici anteriores
Oesophagus
Nn. laryngei recurrentes
N. laryngeus recurrens dex.
Ansa subclavia
N. intercostalis 3
Rr. communicantes griseus and albus
Ganglion thoracicum 3
Truncus sympathicus
N. splanchnicus thoracicus major dex.
Sympathetic fibers along A. phrenica sin.
R. coeliacus trunci vagalis posterioris
Nn. splanchnici thoracici majores
Sympathetic fibers along R. oesophageus a. gastricae sin.
Plexus coeliacus; Ganglia coeliaca
Posterior view
N. vagus dex. (CN X)
Plexus oesophageus (posterior portion)
Truncus vagalis posterior (from CN X)
R. coeliacus
N. posterior curvaturae minoris
Rr. gastrici posteriores

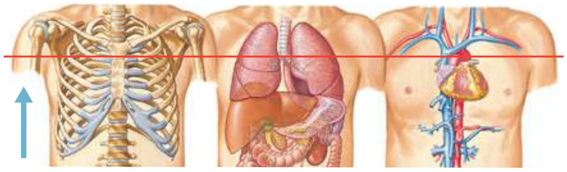
Chest Scans: Axial CT Images

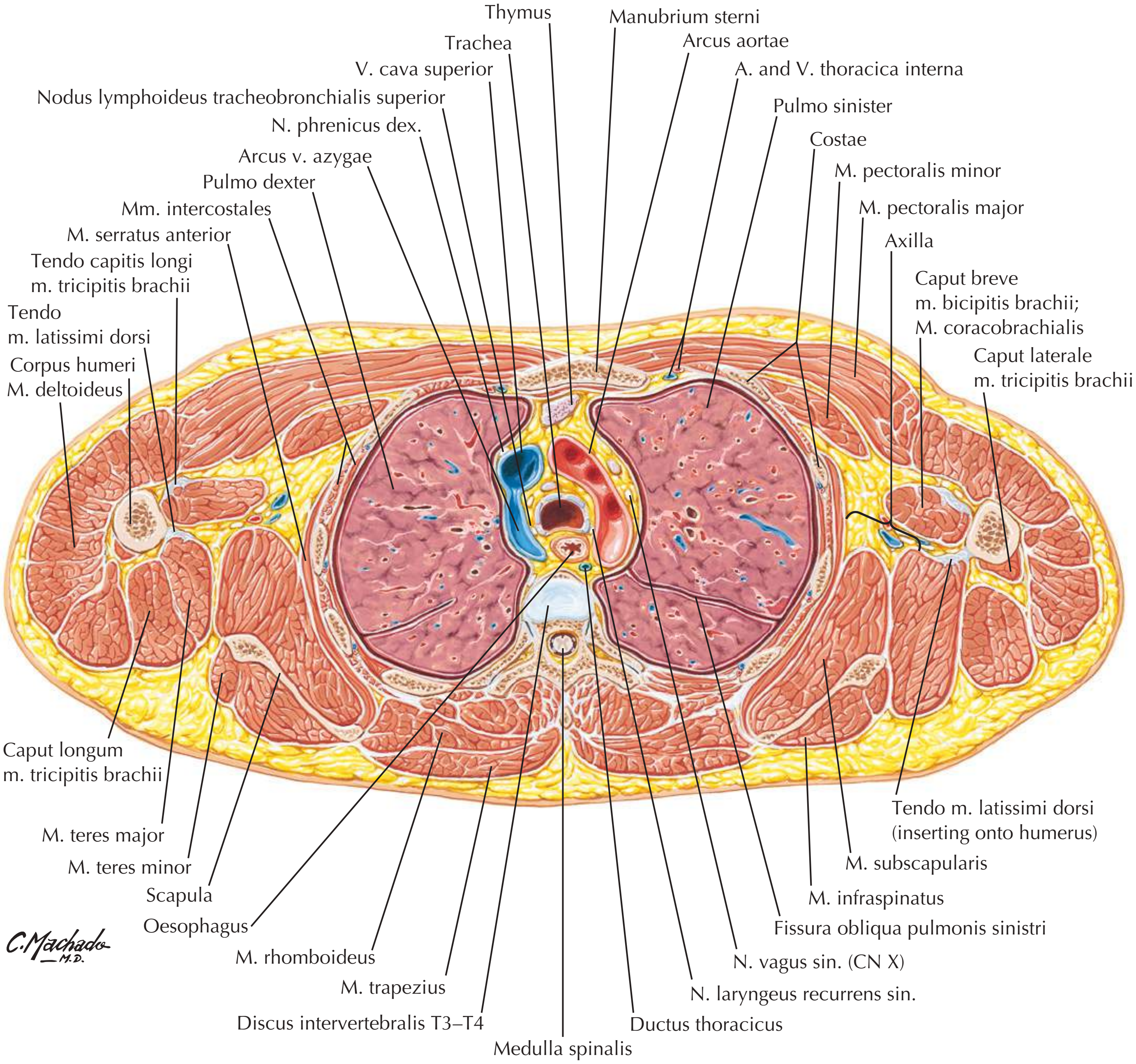
Axial CT images of the thorax from superior (A) to inferior (C)

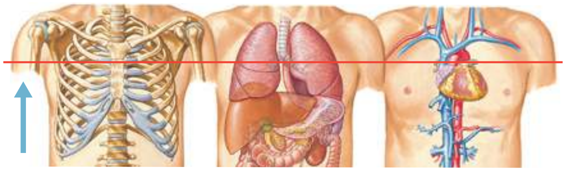

A
Sternum
M. pectoralis major
Aorta ascendens
V. cava superior
A. pulmonalis dextra
Bronchus principalis dex.
Thymus
Truncus pulmonalis
Pulmo sinister
A. pulmonalis sinistra
Aorta descendens (Aorta thoracica)
B
Ventriculus dexter
Atrium dextrum
Aorta ascendens
V. cava superior
Vv. pulmonales dextrae
Atrium sinistrum
C
Ventriculus dexter
Atrium dextrum
V. cava inferior
Oesophagus
Pediculus arcus vertebrae
Lamina arcus vertebrae
Ventriculus sinister
Aorta descendens (Aorta thoracica)
A
B
C
C. Machado M.D.

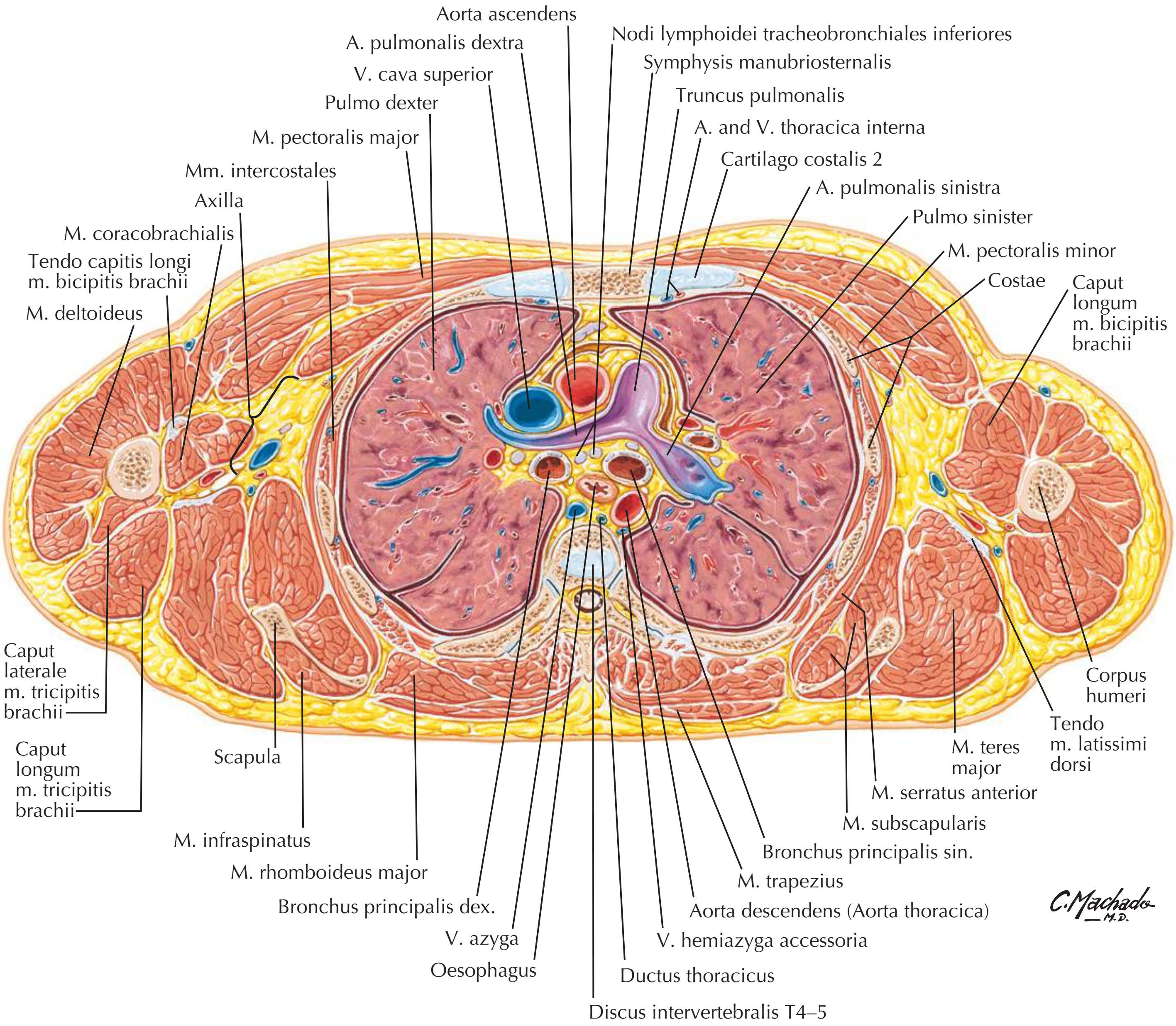



Discus articulationis sternoclavicularis
Clavicula
Nodus lymphoideus mediastinalis
V. brachiocephalica dex.
Manubrium sterni
Truncus brachiocephalicus
Cartilago costalis 1
Trachea
Pulmo dexter
V. brachiocephalica sin.
M. pectoralis major
A. communis carotidis
Axilla
N. vagus sin. (CN X)
Tendo capitis longi m. tricipitis brachii
M. pectoralis minor
Collum chirurgicum humeri
Corpus humeri
M. deltoideus
M. subscapularis
Mm. intercostales
M. rhomboideus major
Articulatio costotransversaria
M. trapezius
N. phrenicus
N. vagus dex. (CN X)
Corpus vertebrae T3
Medulla spinalis
Oesophagus
Caput longum m. tricipitis brachii
M. teres minor
Scapula
M. infraspinatus
M. serratus anterior
Pulmo sinister
A. subclavia sin.
Erector spinae
N. laryngeus recurrens sin.
Ductus thoracicus
M. transversospinalis
C. Machado M.D.

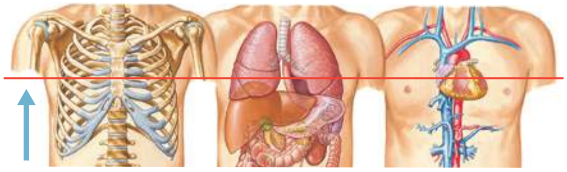


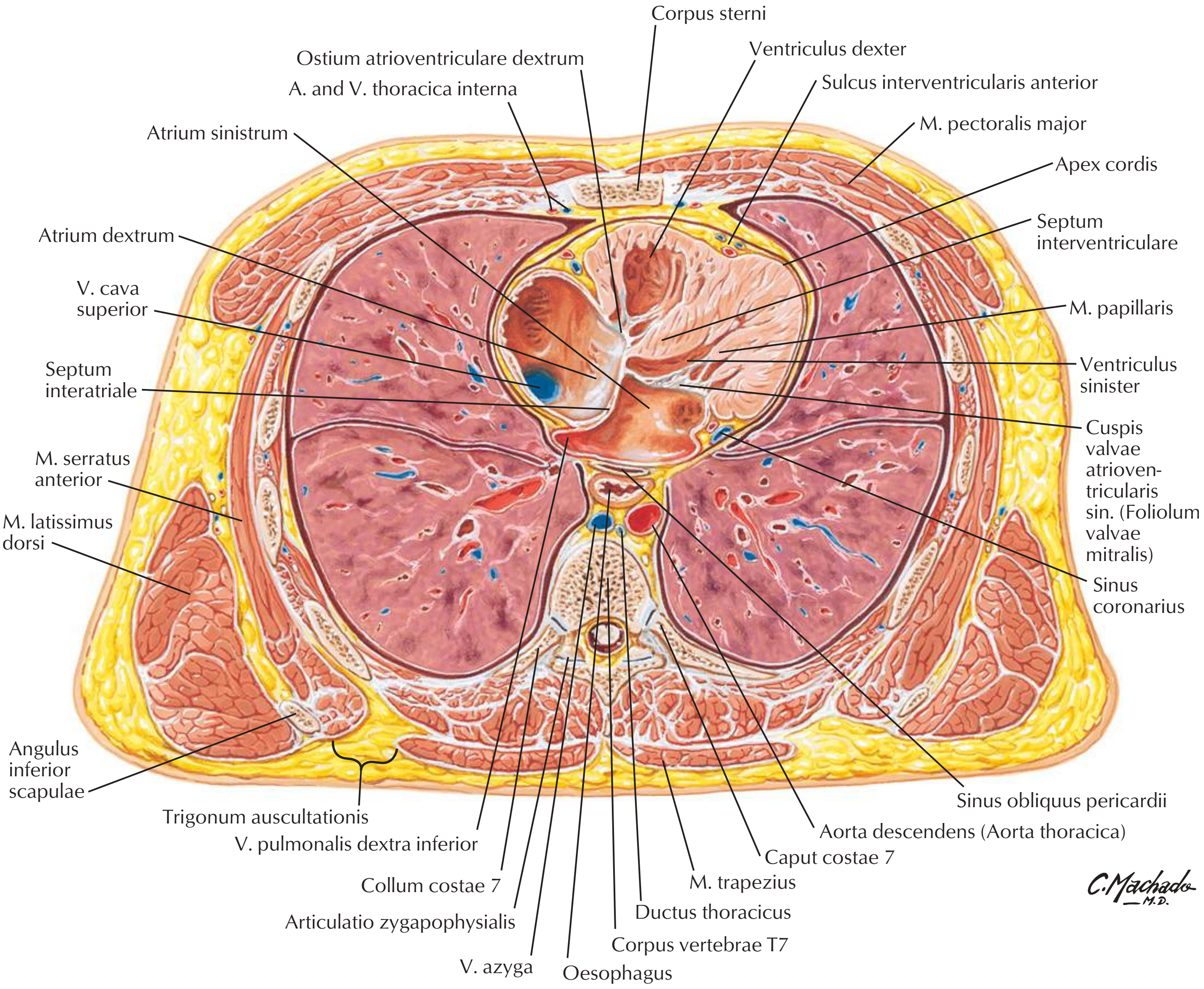

Thymus
Trachea
V. cava superior
Nodus lymphoideus tracheobronchialis superior
N. phrenicus dex.
Arcus v. azygae
Pulmo dexter
Mm. intercostales
M. serratus anterior
Tendo capitis longi m. tricipitis brachii
Tendo m. latissimi dorsi
Corpus humeri
M. deltoideus
Manubrium sterni
Arcus aortae
A. and V. thoracica interna
Pulmo sinister
Costae
M. pectoralis minor
M. pectoralis major
Axilla
Caput breve m. bicipitis brachii; M. coracobrachialis
Caput laterale m. tricipitis brachii
Caput longum m. tricipitis brachii
M. teres major
M. teres minor
Scapula
Oesophagus
M. rhomboideus
M. trapezius
Discus intervertebralis T3–T4
Medulla spinalis
Ductus thoracicus
N. laryngeus recurrens sin.
N. vagus sin. (CN X)
Fissura obliqua pulmonis sinistri
M. infraspinatus
M. subscapularis
Tendo m. latissimi dorsi (inserting onto humerus)
C. Machado M.D.




Aorta ascendens
A. pulmonalis dextra
V. cava superior
Pulmo dexter
M. pectoralis major
Mm. intercostales
Axilla
M. coracobrachialis
Tendo capitis longi m. bicipitis brachii
M. deltoideus
Nodi lymphoidei tracheobronchiales inferiores
Symphysis manubriosternalis
Truncus pulmonalis
A. and V. thoracica interna
Cartilago costalis 2
A. pulmonalis sinistra
Pulmo sinister
M. pectoralis minor
Costae
Caput longum m. bicipitis brachii
Caput laterale m. tricipitis brachii
Caput longum m. tricipitis brachii
Scapula
M. infraspinatus
M. rhomboideus major
Bronchus principalis dex.
V. azyga
Oesophagus
Discus intervertebralis T4–5
Ductus thoracicus
V. hemiazyga accessoria
Aorta descendens (Aorta thoracica)
M. trapezius
Bronchus principalis sin.
M. subscapularis
M. serratus anterior
M. teres major
Tendo m. latissimi dorsi
Corpus humeri
C. Machado M.D.

Cross Section of Thorax at T7 Level




Corpus sterni
Ventriculus dexter
Ostium atrioventriculare dextrum
Sulcus interventricularis anterior
A. and V. thoracica interna
M. pectoralis major
Atrium sinistrum
Apex cordis
Atrium dextrum
Septum interventriculare
V. cava superior
M. papillaris
Septum interatriale
Ventriculus sinister
Cuspis valvae atrioventricularis sin. (Foliolum valvae mitralis)
M. serratus anterior
M. latissimus dorsi
Sinus coronarius
Angulus inferior scapulae
Sinus obliquus pericardii
Trigonum auscultationis
Aorta descendens (Aorta thoracica)
V. pulmonalis dextra inferior
Caput costae 7
Collum costae 7
M. trapezius
Articulatio zygapophysialis
Ductus thoracicus
Corpus vertebrae T7
V. azyga
Oesophagus
C. Machado M.D.

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
INTEGUMENTUM COMMUNE		
Glandula mammaria	Breast cancer is most common malignancy in women; movement of breast with Mm. pectorales indicates invasion of retromammary space	188
SYSTEMA SKELETALE		
Costae	Rib fractures may breach cavitas pleuralis and cause pneumothorax; flail chest occurs when multiple rib fractures lead to thoracic cage instability	192
Angulus sterni (Louisi)	Surface landmark for counting costae (2nd pair articulates here) and spatia intercostalia; divides mediastinum superior from mediastinum inferior	192
Paries thoracis (Costae and Spatia intercostalia)	Knowledge of relationships between chest wall and underlying organs is necessary for thoracotomy	194, 202, 204
Apertura superior thoracis	Compression of neurovascular structures traversing apertura superior thoracis may produce thoracic outlet syndrome	198
Costae sinistrae (9, 10, and 11)	If fractured, may cause injury to underlying spleen	202
SYSTEMA MUSCULARE		
Spatium intercostale	Important relationship of intercostal neurovascular bundle to ribs when placing chest drainage tube to relieve pneumothorax or hemothorax	195, 221
Diaphragma	Widening of hiatus esophageus or congenital defect allows for protrusion of stomach into thorax (hiatal hernia)	201, 239
SYSTEMA RESPIRATORIUM		
Recessus pleurales	Knowledge of location of lung and pleura with respect to chest wall is necessary for chest tube thoracostomy	202, 203
Pleura; Cavitas pleuralis	Air or gas (spontaneous or traumatic) can leak into cavitas pleuralis between pleurae visceralis and parietalis, and compress lung	202, 204
Cupula pleurae	Extends into neck superior to costa 1; it may therefore be punctured during neck procedures, producing pneumothorax	202
Bifurcatio tracheae	Bronchus principalis dexter is shorter, more vertical, and wider; aspirated objects are therefore often in right lung	208
Apex pulmonis	Pancoast syndrome (bronchiogenic carcinoma) of apex invades truncus sympathicus, resulting in Horner's syndrome (ipsilateral miosis, ptosis, anhidrosis, facial flushing)	202, 234
SYSTEMA NERVOSUM		
N. thoracicus longus	May be damaged during chest tube placement or mastectomy, resulting in winged scapula (denervation of M. serratus anterior)	189, 194
N. intercostalis	Site of local anesthetic nerve block for procedures such as thoracostomy or to alleviate pain caused by shingles	196, 197
Ganglion sensorium n. spinalis (Ganglion radicis posterioris)	Can house dormant varicella zoster virus, which, when activated, can result in herpes zoster (shingles)	197
N. phrenicus; Diaphragma	Ipsilateral injury to N. phrenicus may cause ipsilateral paralysis of hemidiaphragm Irritation of diaphragma may manifest as shoulder pain because of referral to C3-5 spinal levels	199, 201 199, 216
N. laryngeus recurrens	Pathologic findings in aorticopulmonary window may compress this nerve and produce hoarseness of voice	235, 236

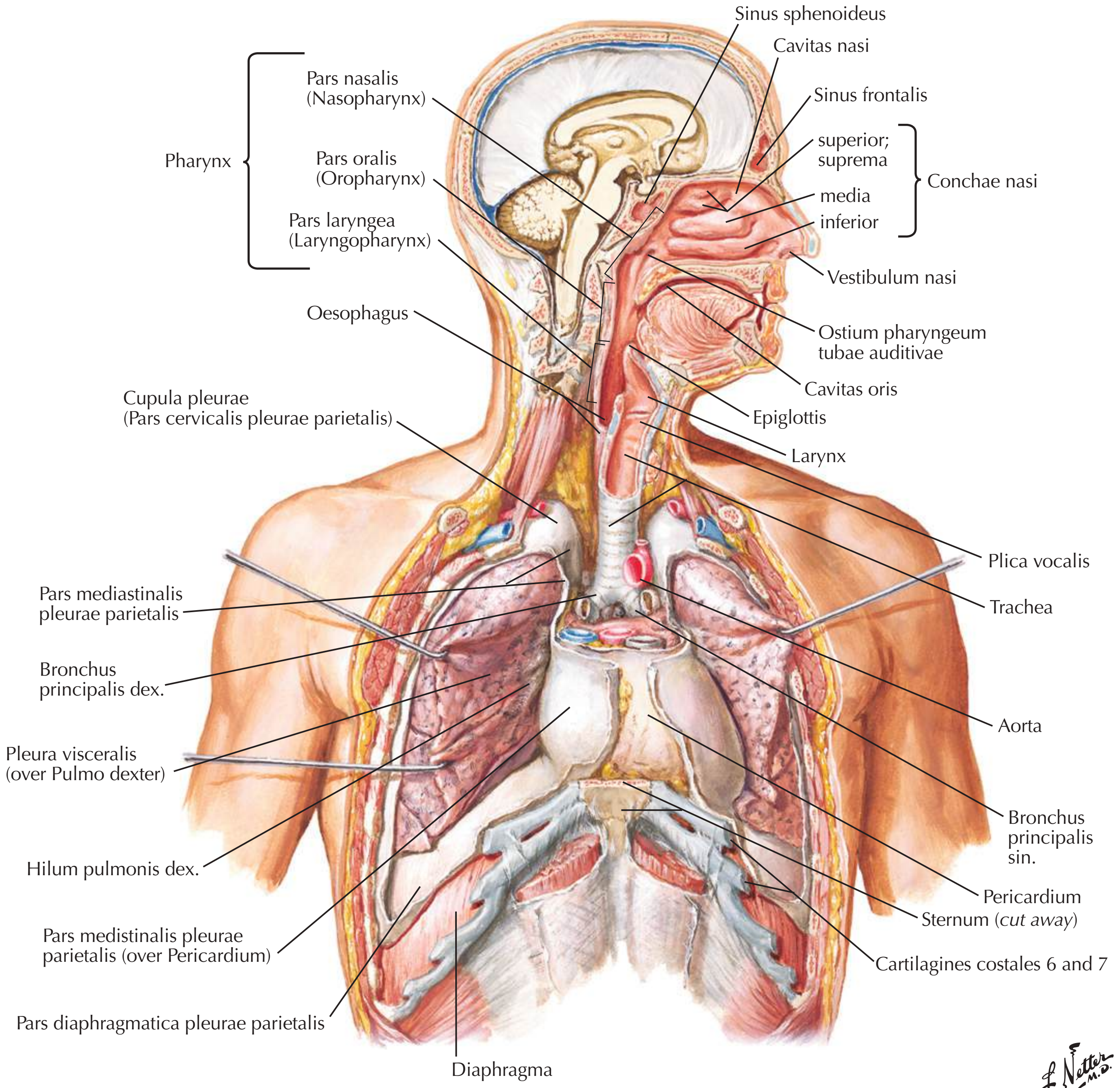
Structures with High* Clinical Significance

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA NERVOSUM—Continued		
Fibrae viscerales afferentes doloris e corde	Pain of myocardial ischemia referred to upper thoracic dermatomes; may be perceived as somatic pain in chest and medial upper limb	231
SYSTEMA CARDIOVASCULARE		
A. thoracica interna	Commonly used for coronary artery bypass grafts	196, 197
Aa. pulmonales	Thromboemboli may obstruct Aa. pulmonales, leading to infarction	205, 210
Pericardium	Pericardial effusion (accumulation of fluid or blood) may compromise heart function (cardiac tamponade)	215, 219
Aa. coronariae	Atherosclerotic blockage may cause myocardial ischemia and/or infarct; A. interventricularis anterior (left anterior descending) most commonly diseased	222
Septum interventriculare cordis	Ventricular septal defect is most common congenital cardiac defect; most often involves pars membranacea septi	225, 228
Valvae cordis	Congenital variations of valve anatomy or valvular disease (e.g., rheumatic heart disease) can cause valvular stenosis	226
Nodus sinuatrialis	Aging, previous heart surgery, and some medications can cause cardiac arrhythmias	229
Lig. arteriosum	Abnormal closure of ductus arteriosus can produce aortic coarctation; lack of closure produces ductus arteriosus persistens; if not closed, may cause exertional dyspnea, pulmonary vascular disease, or heart failure	233
Aorta descendens (Aorta thoracica)	Congenital coarctation of aorta can compromise systemic blood flow; collateral vascular connections can alleviate this condition	240
V. azyga	Drains posterior thorax and provides important collateral channel between venae cavae inferior and superior	241
SYSTEMA LYMPHATICUM		
Vasa lymphatica mammae	Metastatic spread of cancer cells to axilla and chest via lymphatics draining breast	191
Nodi lymphoidei axillares	Primary nodes that receive lymphatic drainage from upper limb, thoracic wall, and breast; commonly enlarged in patients with breast cancer	190, 191

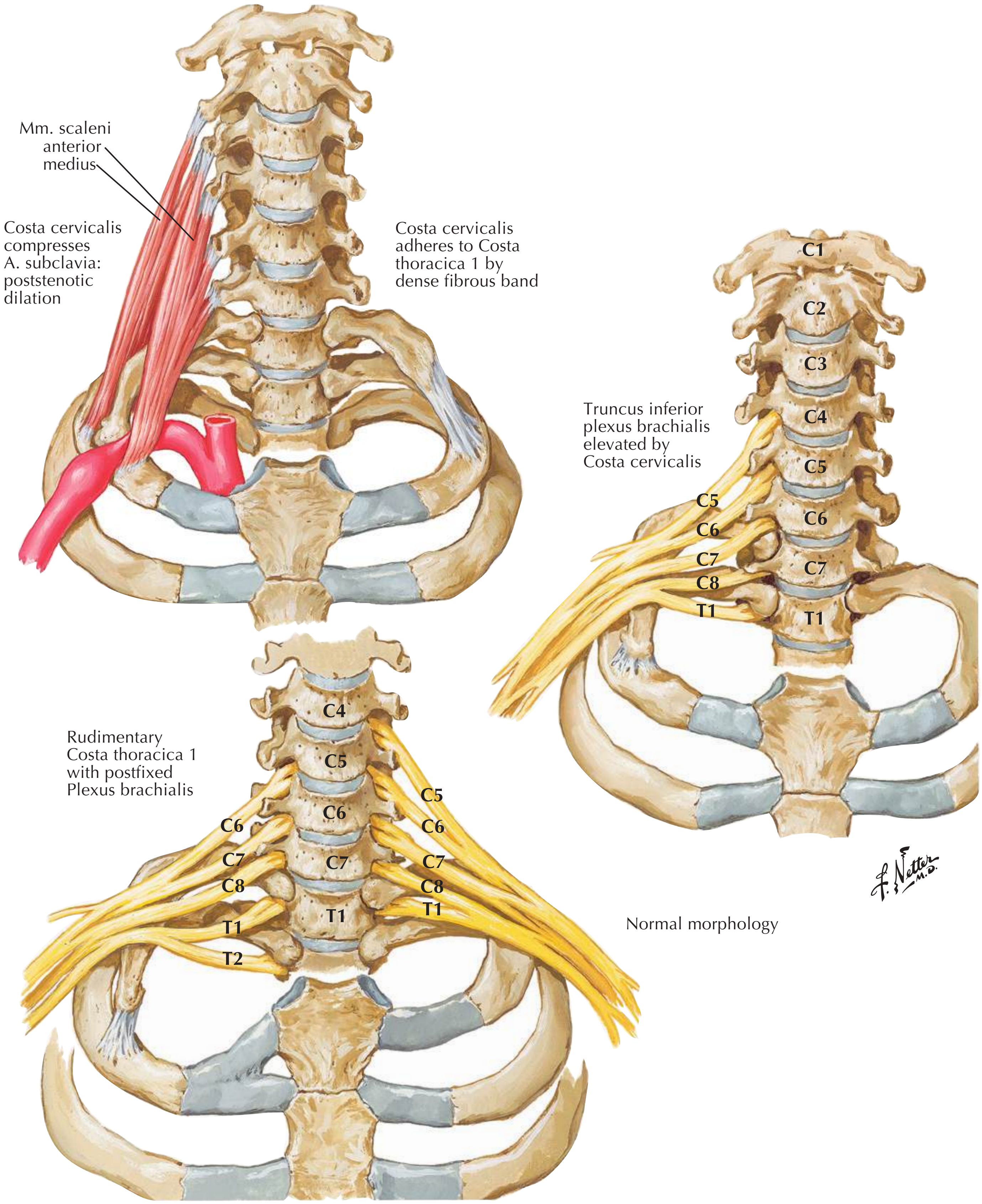
*Selections were based largely on clinical data as well as commonly covered clinical correlations in gross anatomy courses.

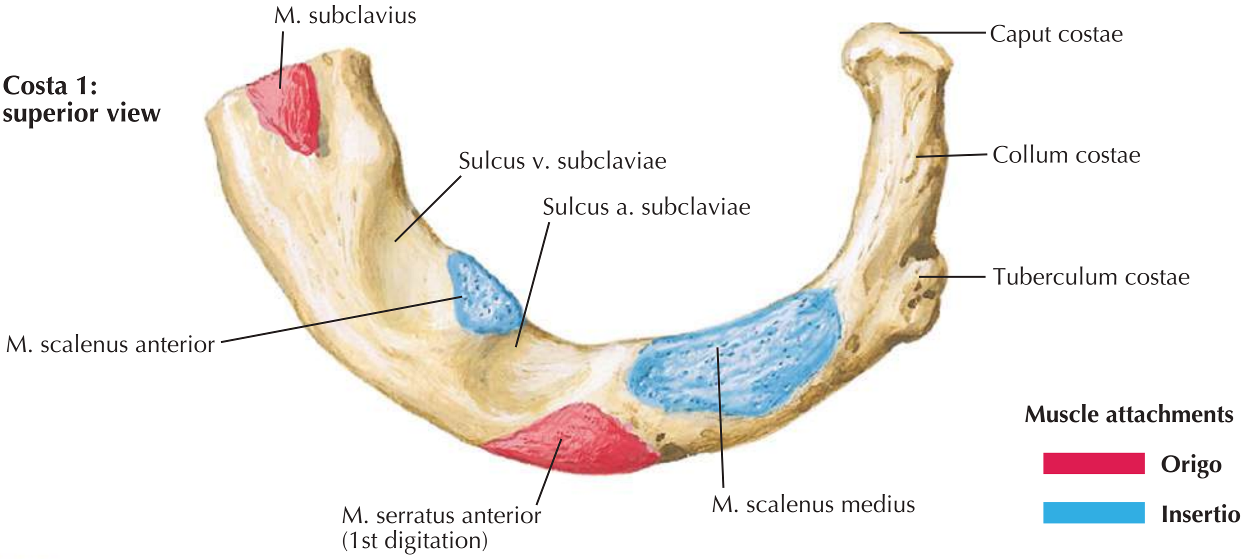
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Diaphragma	Paries posterior abdominis	Proc. xiphoideus; Cartilagines costales 7-12; Vertebrae L1–L3	Centrum tendineum diaphragmatis	N. phrenicus	Aa. pericardiacophrenica, musculophrenica, and phrenicae superiores and inferior	Draws central tendon down and forward during inspiration
Mm. intercostales externi	Paries thoracis	Margines inferiores costarum	Margines superiores costarum, below rib of origin	Nn. intercostales	Aa. intercostales posteriores; Rr. collaterales aa. intercostalium posteriorum; Truncus costocervicalis; Rr. intercostales anteriores a. thoracicae internae; A. musculophrenica	Supports intercostal spaces in inspiration and expiration, elevates ribs in inspiration
Mm. intercostales interni	Paries thoracis	Margines superiores costarum	Margines inferiores cartilaginum costalium and edge of Sulcus costae, above rib of origin	Nn. intercostales	Rr. musculares aa. intercostalium anteriorum and posteriorum; Rr. intercostales aa. thoracicae internae and musculophrenicae; Rr. trunci costocervicalis	Prevents pushing out or drawing in of intercostal spaces in inspiration and expiration, lowers ribs in forced expiration
Mm. intercostales intimi	Paries thoracis	Margines superiores costarum	Margines inferiores costarum, above rib of origin	Nn. intercostales	Rr. musculares aa. intercostalium anteriorum and posteriorum; Rr. intercostales aa. thoracicae internae and musculophrenicae; Rr. trunci costocervicalis	Elevates ribs
Levatores costarum	Paries thoracis	Procc. transversi vertebrarum C7 and T1–T11	Subjacent costae, between tubercula costae and anguli costae	Rr. posteriores nn. thoracicorum inferiorum	Aa. intercostales posteriores	Elevates ribs
M. pectoralis major	Regiones pectoralis and axillaris	Pars medialis claviculae; Sternum to 7th rib; Cartilagines costarum verarum; Aponeurosis m. obliqui externi abdominis	Crista tuberculi majoris (Labium laterale sulci intertubercularis) humeri	Nn. pectorales medialis and lateralis	R. pectoralis a. thoracoacromialis; Rr. perforantes a. thoracicae internae	Flexes and adducts arm, rotates arm medially
M. pectoralis minor	Regiones pectoralis and axillaris	Facies externae marginum superiorum costarum 3–5	Proc. coracoideus scapulae	N. pectoralis medialis	R. pectoralis a. thoracoacromialis; Aa. thoracicae superior and lateralis	Lowers lateral angle of scapula and protracts scapula
M. serratus anterior	Regiones pectoralis and axillaris	Facies laterales costarum 1-8 or 9	Facies costalis marginis medialis scapulae	N. thoracicus longus	A. thoracica lateralis	Protracts scapula and holds it against thoracic wall
M. serratus posterior inferior	Mm. intermedii dorsi	Procc. spinosi vertebrarum T11–L3	Margines inferiores costarum 9–12	Rr. anteriores nn. thoracicorum inferiorum	Aa. intercostales posteriores	Depresses ribs
M. serratus posterior superior	Mm. intermedii dorsi	Lig. nuchae; Procc. spinosi vertebrarum C7–T3	Margines superiores costarum 2–5	Rr. anteriores nn. thoracicorum superiorum	Aa. intercostales posteriores	Elevates ribs
Mm. subcostales	Paries thoracis	Facies internae costarum inferiorum near their anguli	Margines superiores costarum of 2nd or 3rd rib below	Nn. intercostales 2-5	Aa. intercostales posteriores and musculophrenica	Depresses ribs
M. transversus thoracis	Paries thoracis	Facies internae cartilaginum costalium 2–6	Facies posterior partis inferioris sterni	Nn. intercostales	Aa. intercostales anteriores and thoracica interna	Depresses ribs and costal cartilages

Variations in spinal nerve contributions to the innervation of muscles, their arterial supply, their attachments, and their actions are common themes in human anatomy. Therefore, expect differences between texts and realize that anatomical variation is normal.


Sinus sphenoideus
Cavitas nasi
Sinus frontalis
Pharynx
Pars nasalis
(Nasopharynx)
Pars oralis
(Oropharynx)
Pars laryngea
(Laryngopharynx)
superior;
suprema
media
inferior
Conchae nasi
Vestibulum nasi
Oesophagus
Ostium pharyngeum
tubae auditivae
Cavitas oris
Cupula pleurae
(Pars cervicalis pleurae parietalis)
Epiglottis
Larynx
Plica vocalis
Trachea
Pars mediastinalis
pleurae parietalis
Bronchus
principalis dex.
Aorta
Pleura visceralis
(over Pulmo dexter)
Bronchus
principalis
sin.
Hilum pulmonis dex.
Pericardium
Sternum (cut away)
Pars medistinalis pleurae
parietalis (over Pericardium)
Cartilagines costales 6 and 7
Pars diaphragmatica pleurae parietalis
Diaphragma
F. Netter M.D.

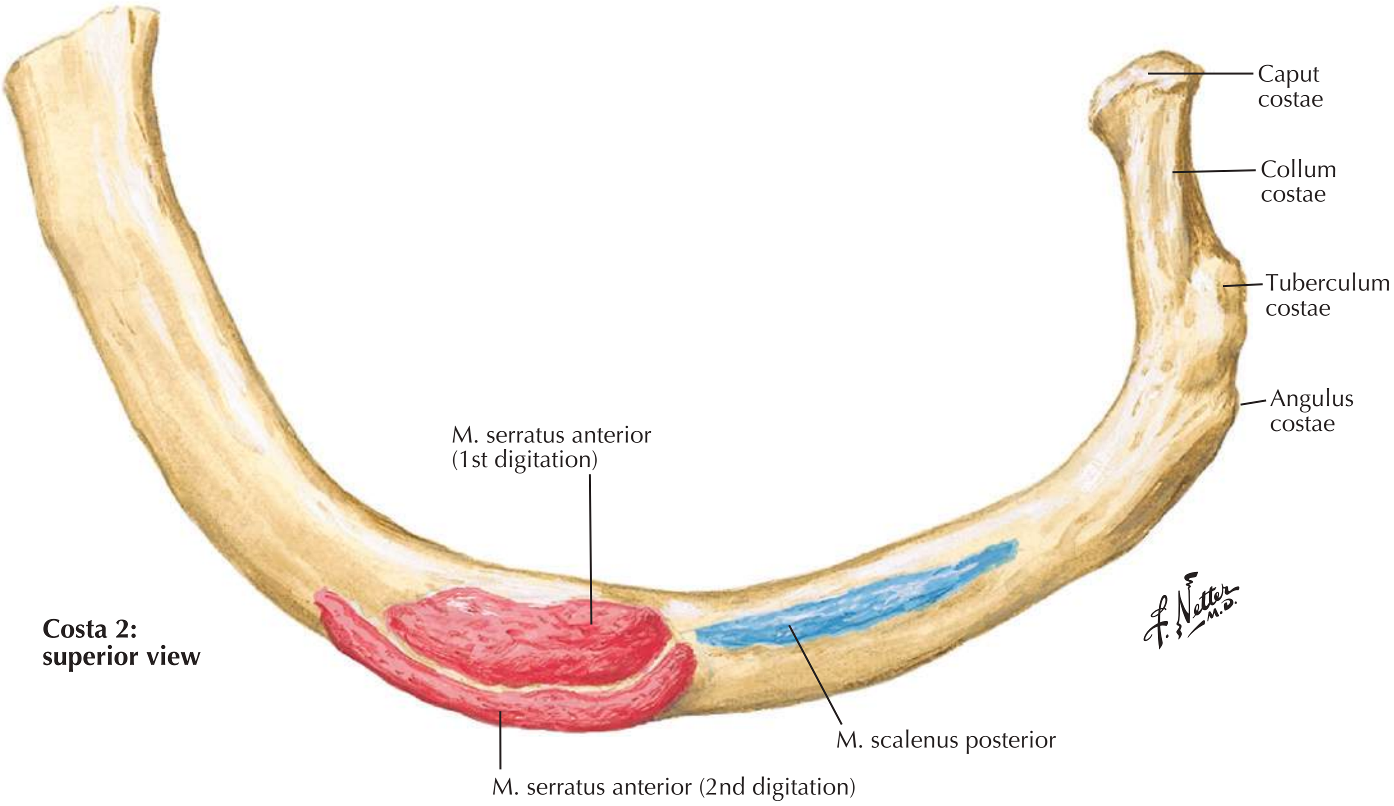
Cervical Ribs and Related Anomalies


Mm. scaleni
anterior
medius
Costa cervicalis compresses A. subclavia: poststenotic dilation
Costa cervicalis adheres to Costa thoracica 1 by dense fibrous band
C1
C2
C3
C4
C5
C6
C7
T1
Truncus inferior plexus brachialis elevated by Costa cervicalis
C5
C6
C7
C8
T1
Rudimentary Costa thoracica 1 with postfixed Plexus brachialis
C4
C5
C6
C7
T1
C6
C7
C8
T1
T2
C5
C6
C7
C8
T1
Normal morphology



Costa 1:
superior view

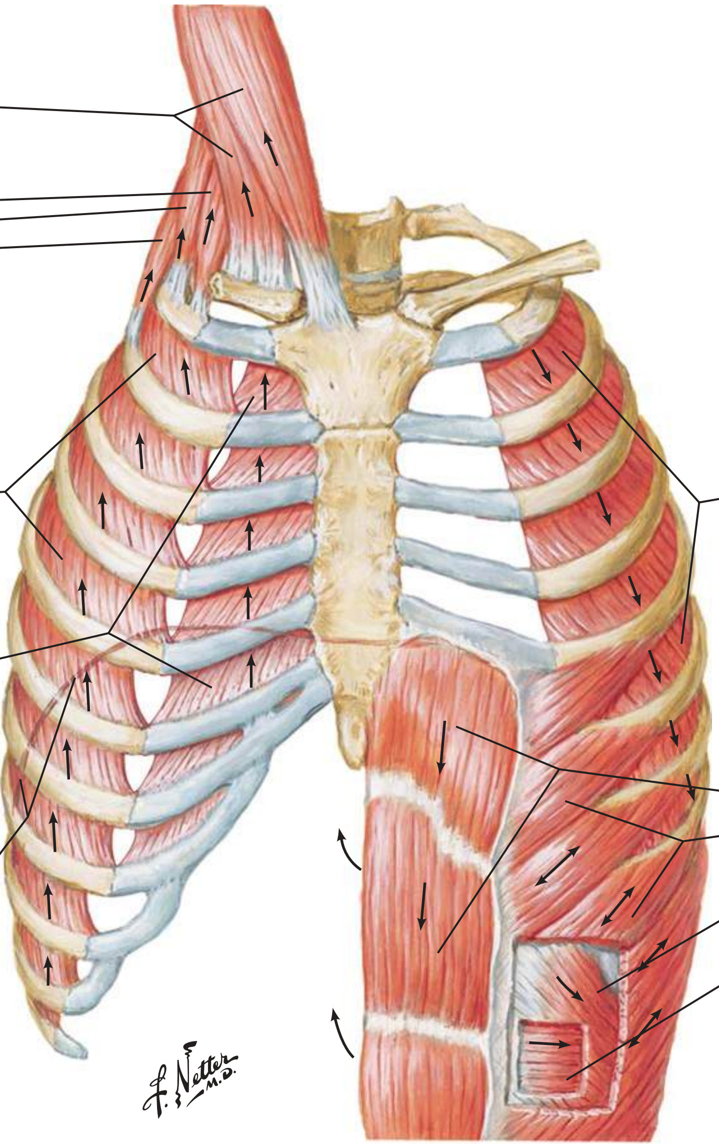
M. subclavius
Caput costae
Sulcus v. subclaviae
Collum costae
Sulcus a. subclaviae
Tuberculum costae
M. scalenus anterior
M. serratus anterior
(1st digitation)
M. scalenus medius
Muscle attachments
🟥 Origo
🟦 Insertio



Costa 2:
superior view

Caput
costae
Collum
costae
Tuberculum
costae
Angulus
costae
M. serratus anterior
(1st digitation)
M. scalenus posterior
M. serratus anterior (2nd digitation)
F. Netter M.D.

Muscles of Respiration



Muscles of inspiration

Accessory

M. sternocleidomastoideus (elevates sternum)

Mm. scaleni
anterior
medius
posterior
(elevate and fix upper ribs)

Principal

Mm. intercostales externi, most superficial (elevate ribs, thus increasing width of thoracic cavity and aiding deep inspiration)

Interchondral parts of Mm. intercostales interni are deep to membranae intercostales externae (also elevate ribs and aid Mm. intercostales externi with deep inspiration)

Diaphragma (domes descend, thus increasing vertical dimension of thoracic cavity; also elevates lower ribs)

Muscles of expiration

Quiet breathing

Expiration results from passive recoil of lungs and rib cage

Active breathing

Mm. intercostales interni, except interchondral part (aid forced expiration)

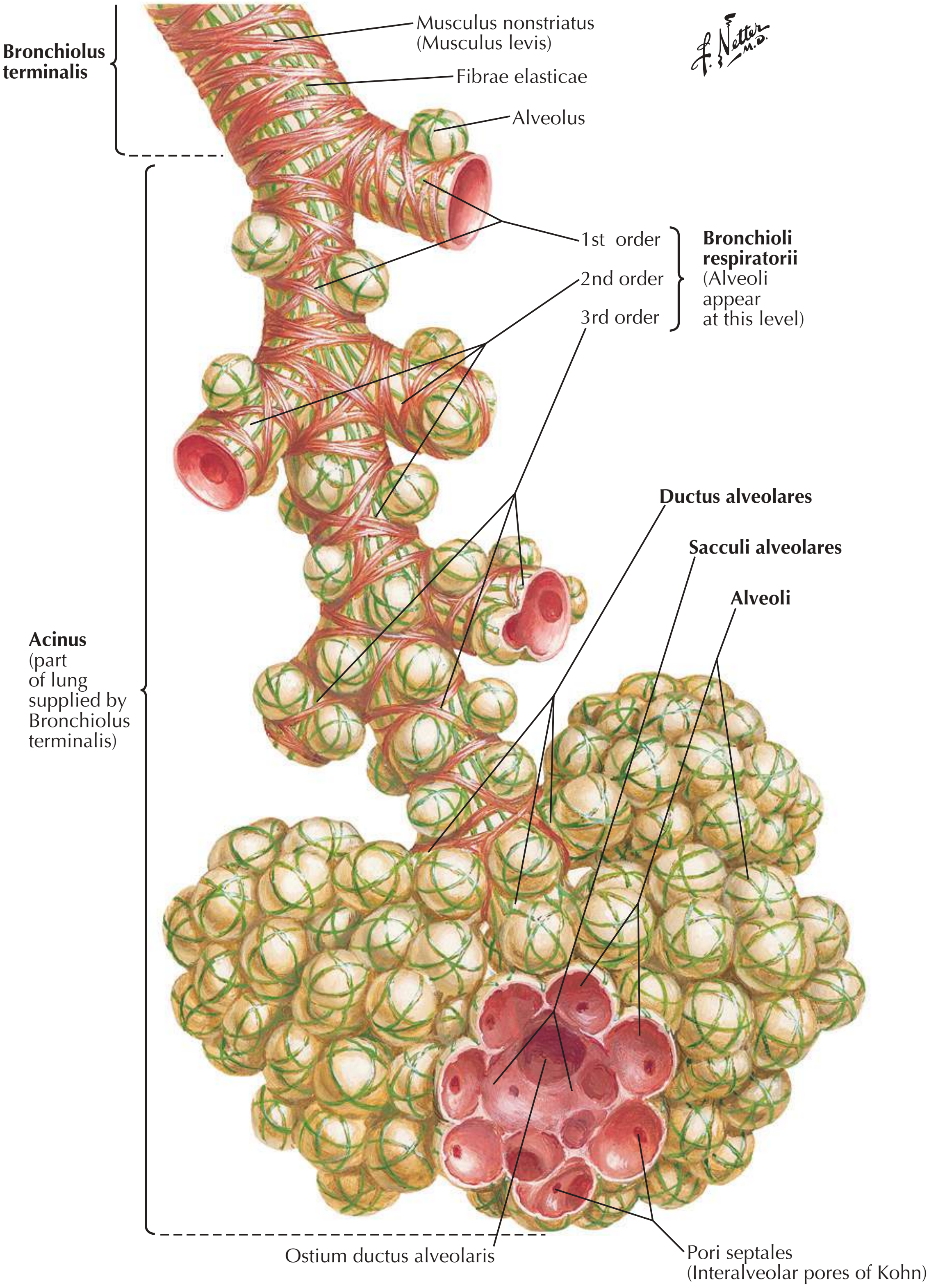
Abdominals (depress lower ribs, compress abdominal contents, thus pushing up diaphragma, aiding forced expiration)

M. rectus abdominis

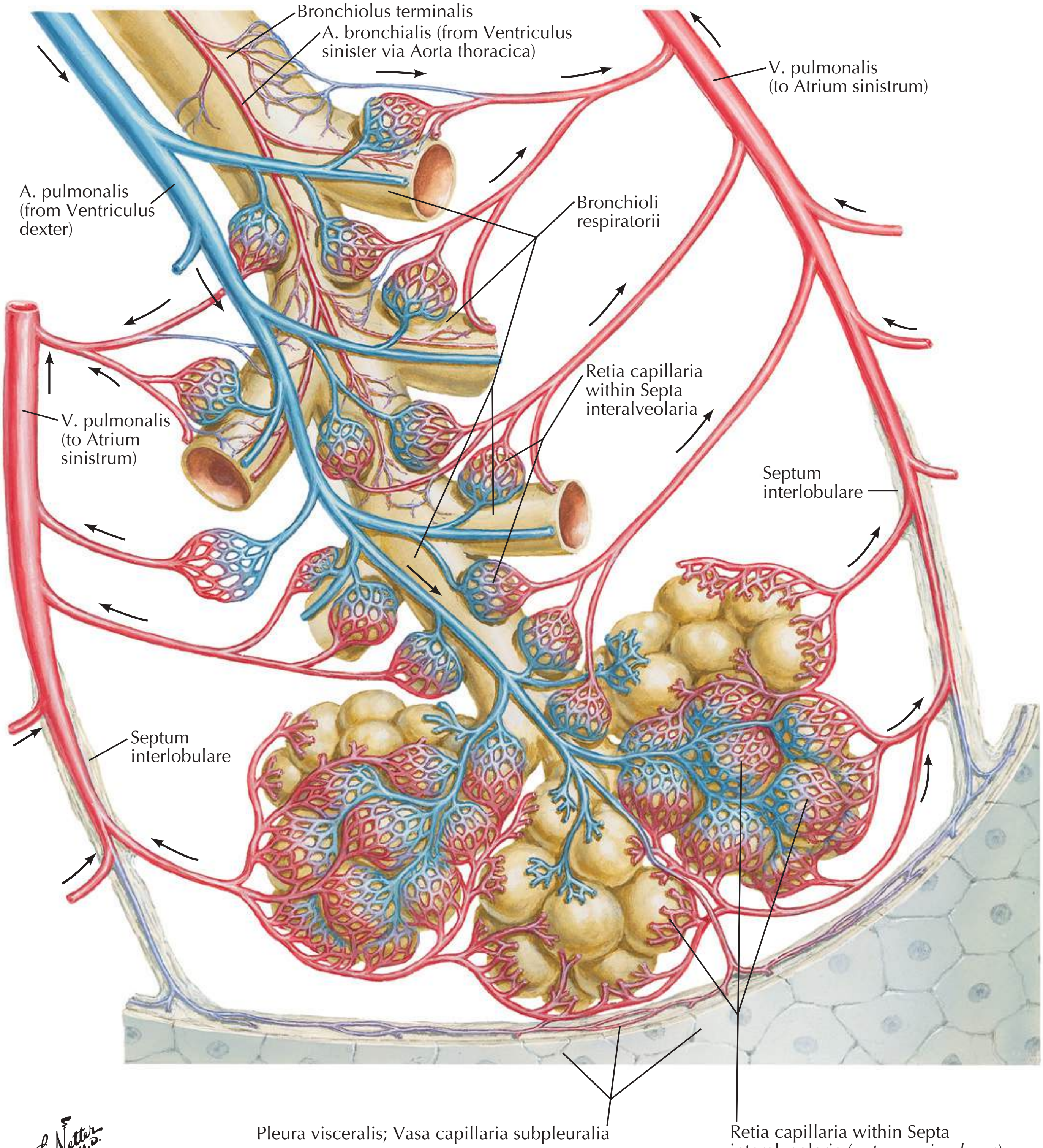
M. obliquus externus abdominis

M. obliquus internus abdominis

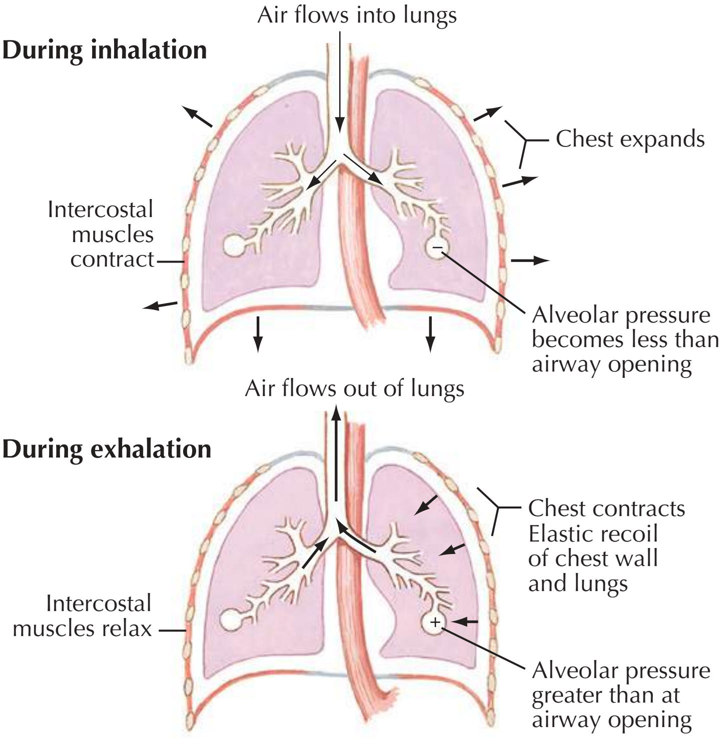
M. transversus abdominis


Bronchiolus terminalis
Musculus nonstriatus (Musculus levis)
Fibrae elasticae
Alveolus
1st order
2nd order
3rd order
Bronchioli respiratorii (Alveoli appear at this level)
Acinus (part of lung supplied by Bronchiolus terminalis)
Ductus alveolares
Sacculi alveolares
Alveoli
Ostium ductus alveolaris
Pori septales (Interalveolar pores of Kohn)

Structure of intrapulmonary airways


Bronchiolus terminalis
A. bronchialis (from Ventriculus sinister via Aorta thoracica)
V. pulmonalis (to Atrium sinistrum)
A. pulmonalis (from Ventriculus dexter)
Bronchioli respiratorii
Retia capillaria within Septa interalveolaria
V. pulmonalis (to Atrium sinistrum)
Septum interlobulare
Septum interlobulare
Pleura visceralis; Vasa capillaria subpleuralia
Retia capillaria within Septa interalveolaria (*cut away in places*)

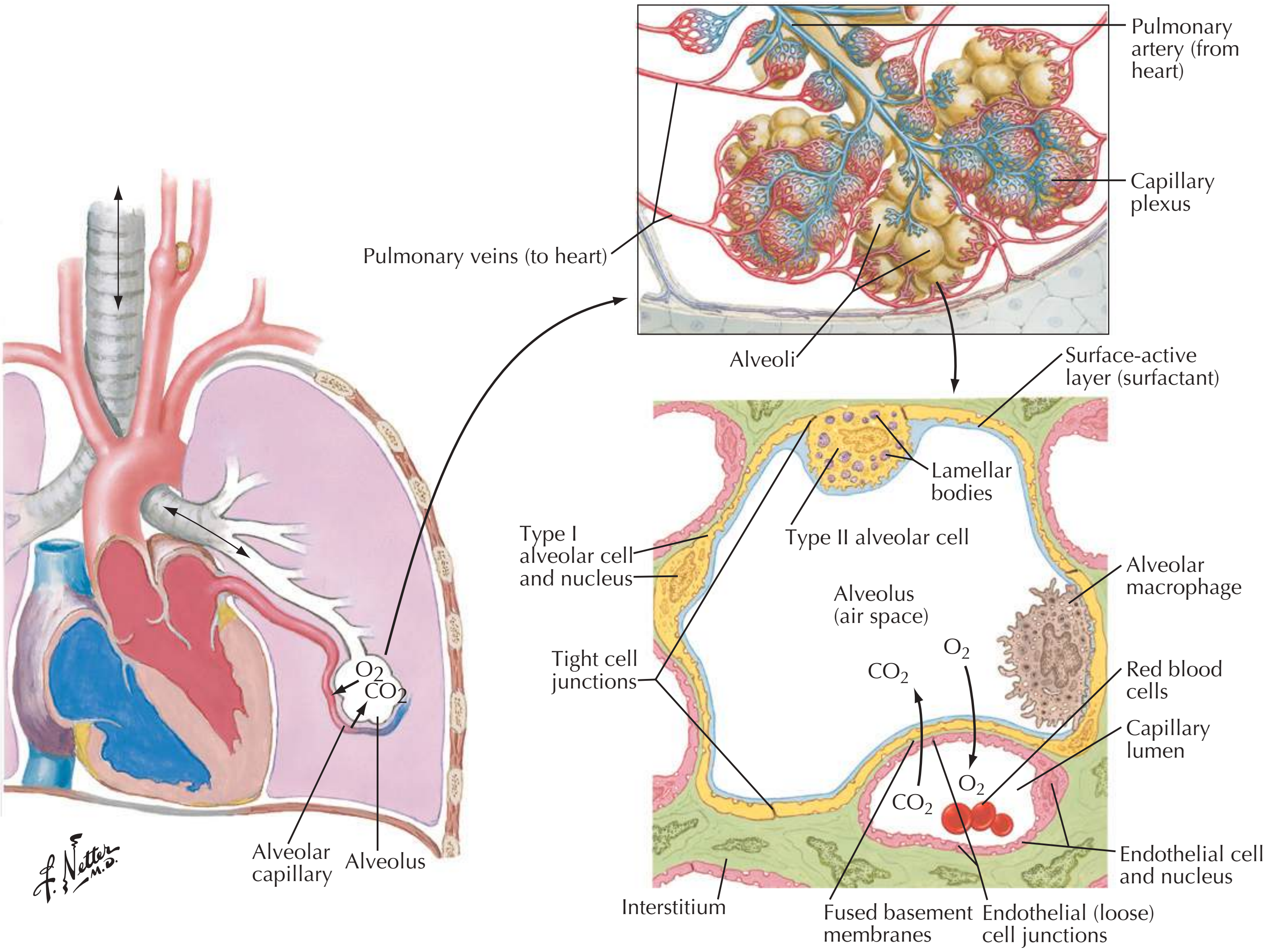
Aa. pulmonales and their branches distribute segmentally with the bronchi.
Vv. pulmonales and their tributaries drain intersegmentally.


During inhalation

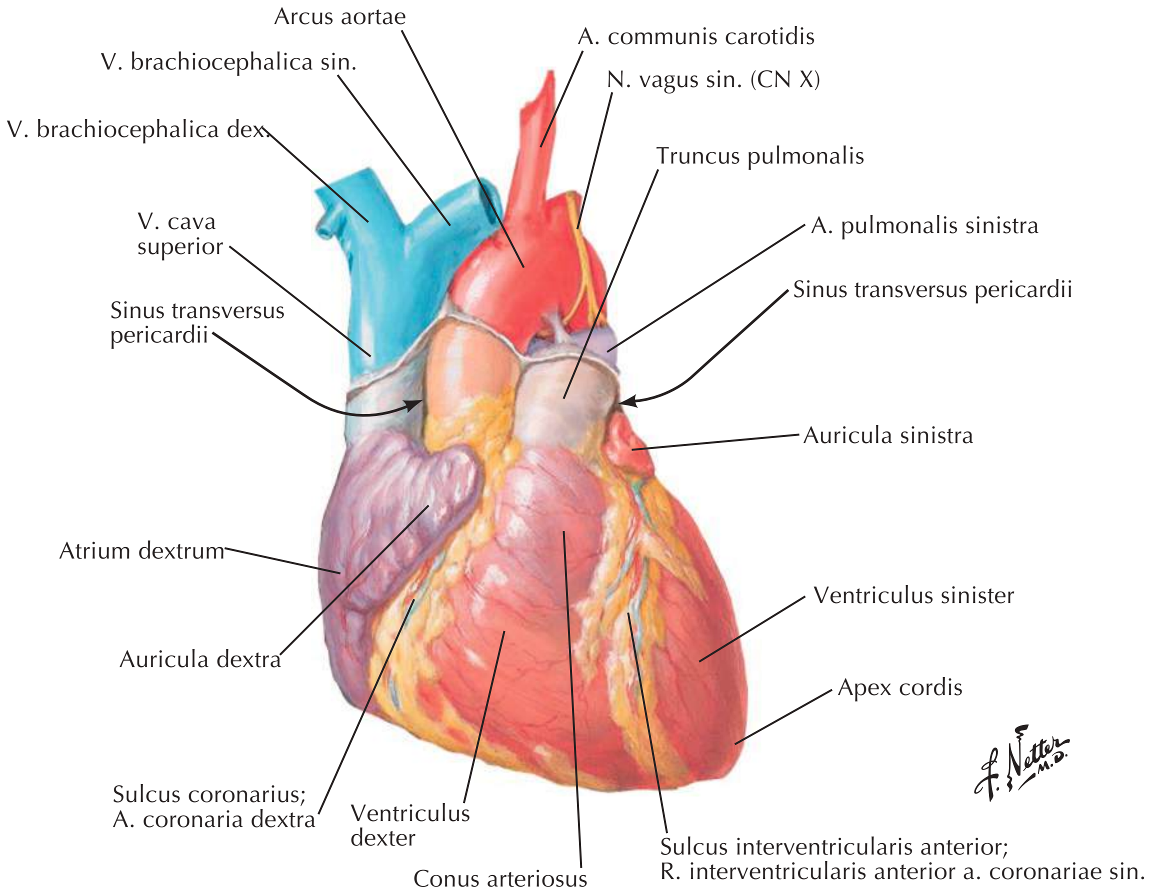
Air flows into lungs
Chest expands
Intercostal muscles contract
−
Alveolar pressure becomes less than airway opening
Air flows out of lungs

During exhalation

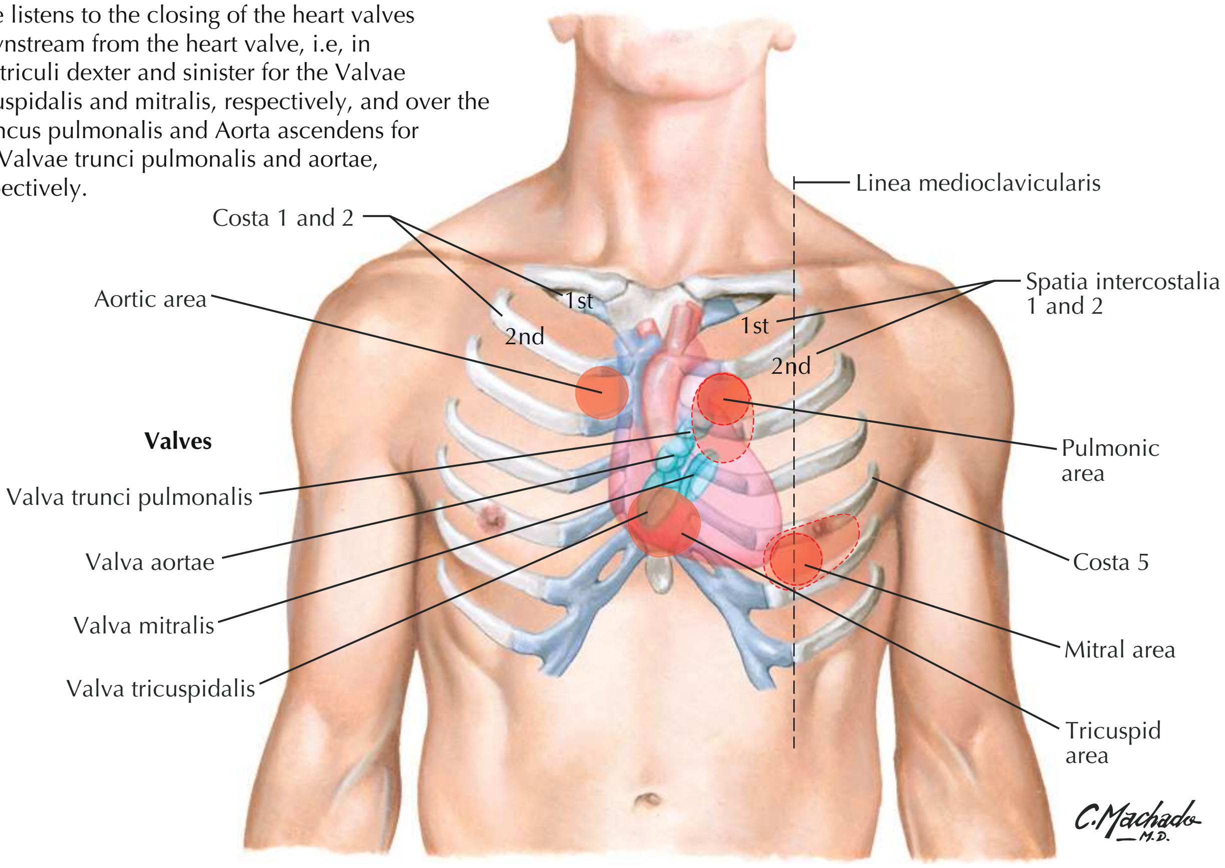
Chest contracts Elastic recoil of chest wall and lungs
Intercostal muscles relax
+
Alveolar pressure greater than at airway opening


Pulmonary artery (from heart)
Capillary plexus
Pulmonary veins (to heart)
Alveoli
O_2
CO_2
Alveolar capillary
Alveolus
F. Netter M.D.
Surface-active layer (surfactant)
Lamellar bodies
Type II alveolar cell
Type I alveolar cell and nucleus
Alveolar macrophage
Alveolus (air space)
O_2
CO_2
Tight cell junctions
Red blood cells
Capillary lumen
O_2
CO_2
Endothelial cell and nucleus
Interstitium
Fused basement membranes
Endothelial (loose) cell junctions

Anterior Aspect of Heart

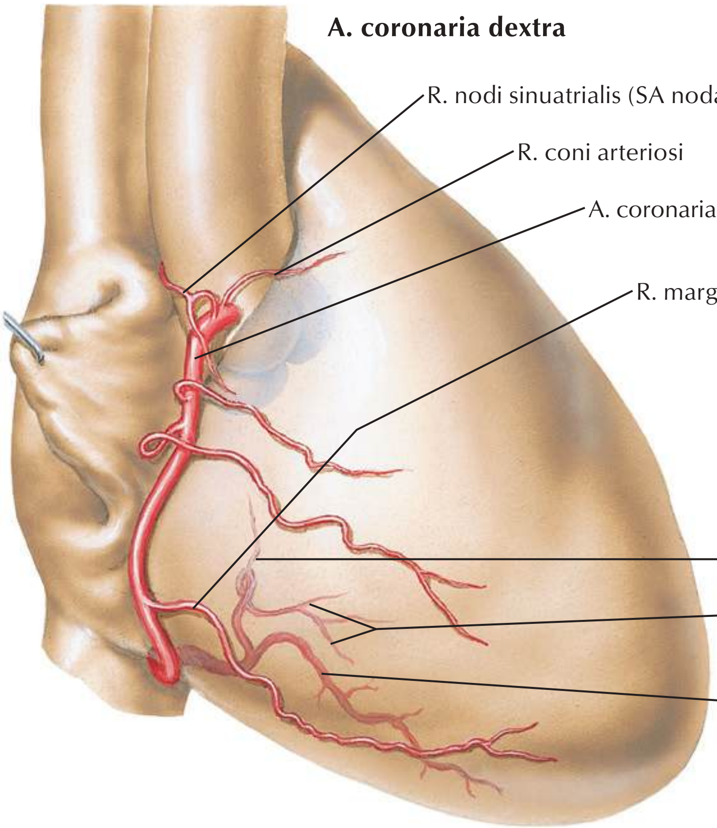

Arcus aortae
V. brachiocephalica sin.
V. brachiocephalica dex.
V. cava superior
Sinus transversus pericardii
A. communis carotidis
N. vagus sin. (CN X)
Truncus pulmonalis
A. pulmonalis sinistra
Sinus transversus pericardii
Auricula sinistra
Atrium dextrum
Auricula dextra
Ventriculus sinister
Apex cordis
Sulcus coronarius;
A. coronaria dextra
Ventriculus dexter
Conus arteriosus
Sulcus interventricularis anterior;
R. interventricularis anterior a. coronariae sin.

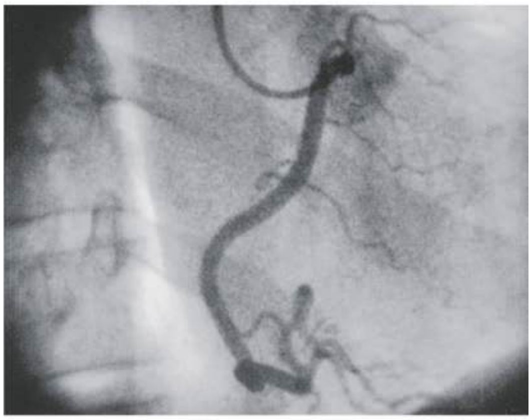
Precordial areas of auscultation:
One listens to the closing of the heart valves downstream from the heart valve, i.e, in Ventriculi dexter and sinister for the Valvae tricuspidalis and mitralis, respectively, and over the Truncus pulmonalis and Aorta ascendens for the Valvae trunci pulmonalis and aortae, respectively.


Linea medioclavicularis
Costa 1 and 2
1st
2nd
Aortic area
Spatia intercostalia 1 and 2
1st
2nd
Valves
Valva trunci pulmonalis
Valva aortae
Valva mitralis
Valva tricuspidalis
Pulmonic area
Costa 5
Mitral area
Tricuspid area

Coronary Arteries: Right Anterior Oblique Views with Arteriograms

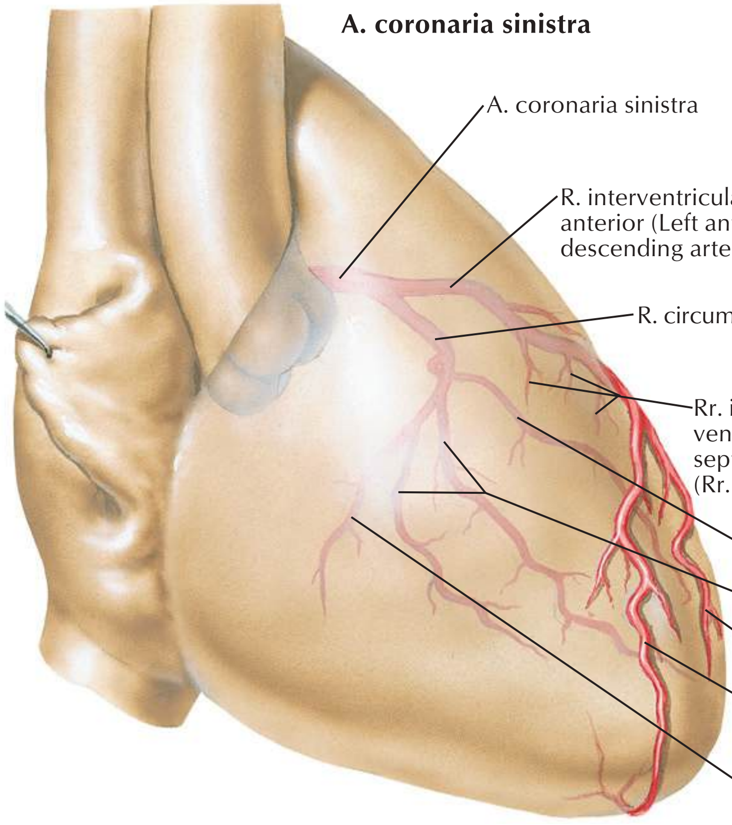
A. coronaria dextra

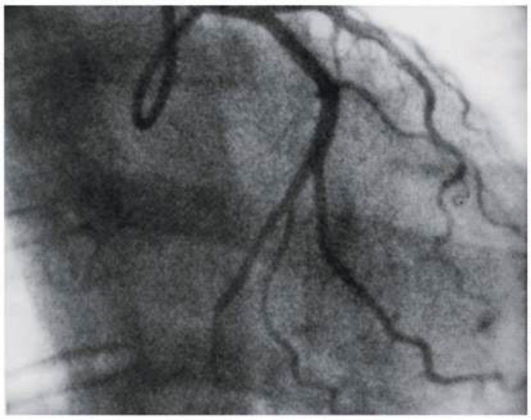

R. nodi sinuatrialis (SA nodal branch)
R. coni arteriosi
A. coronaria dextra
R. marginalis dexter
R. nodi atrioventricularis
Rr. posterolaterales dextri (to back of Ventriculus sinister)
R. interventricularis posterior (R. interventricularis inferior; Posterior descending artery)



Arteriogram

A. coronaria sinistra

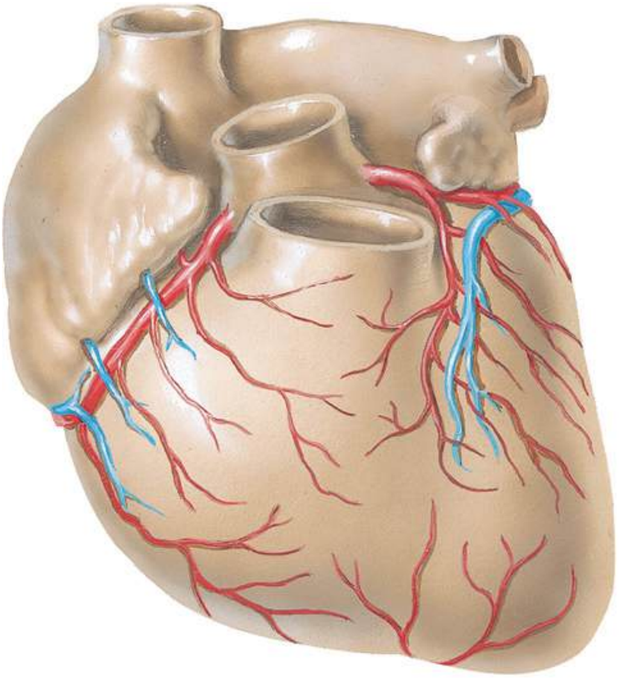

A. coronaria sinistra
R. interventricularis anterior (Left anterior descending artery)
R. circumflexus
Rr. interventriculares septales (Rr. perforantes)
R. marginalis sinister
Rr. posterolaterales
R. diagonalis
R. interventricularis anterior
R. atrioventricularis



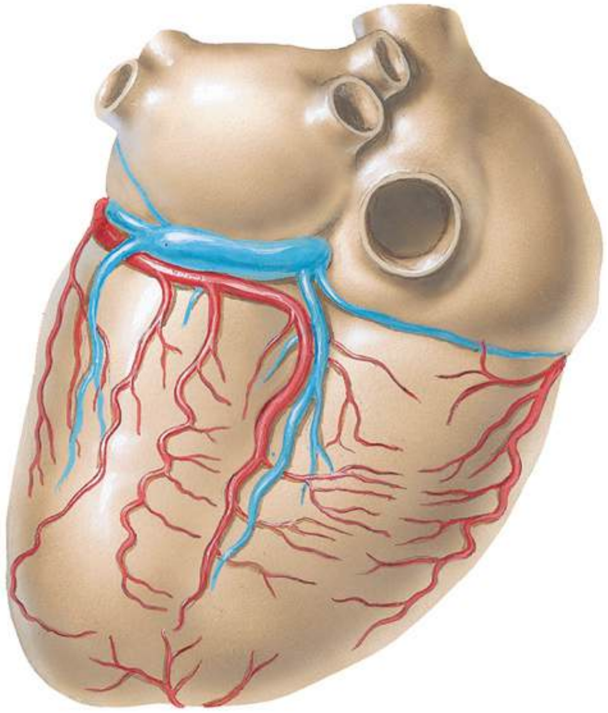
Arteriogram

F. Netter M.D.

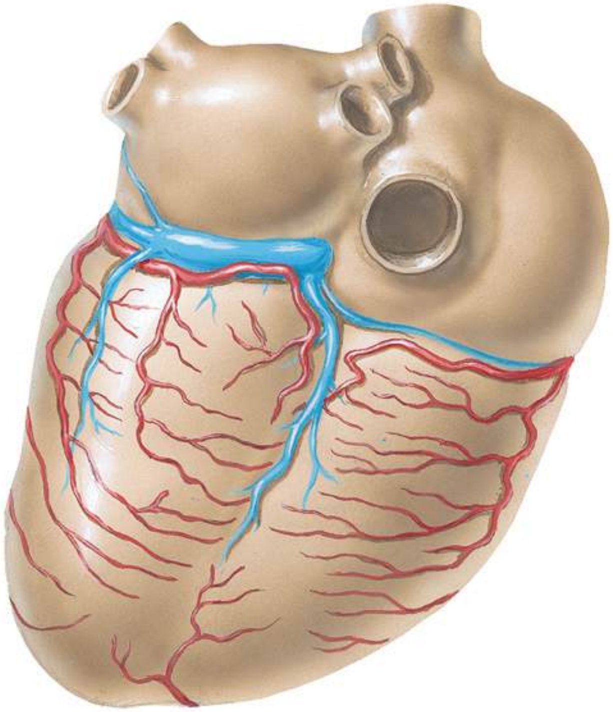
Coronary Arteries and Cardiac Veins: Variations



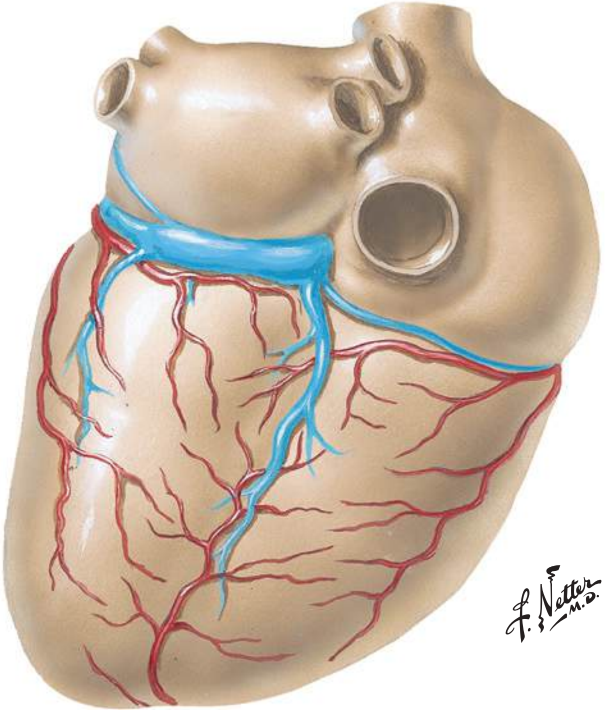
Anterior interventricular (left anterior descending) branch of left coronary artery is very short. Apical part of anterior (sternocostalis) surface is supplied by branches from posterior interventricular (posterior descending) branch of a. right coronary artery curving around apex of heart.



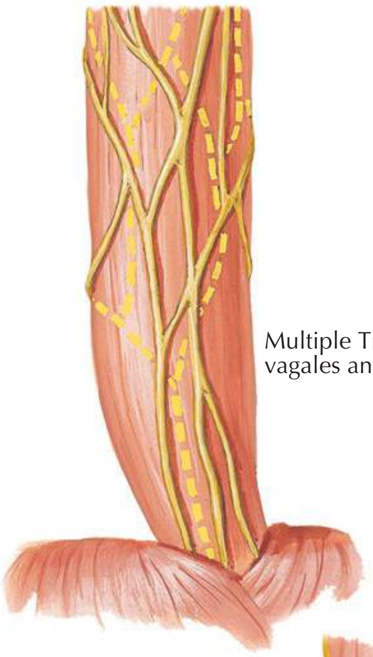
Posterior interventricular (posterior descending) branch is derived from circumflex branch of left coronary artery instead of from right coronary artery.

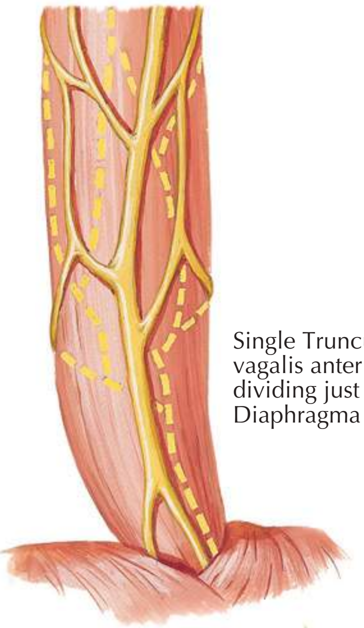


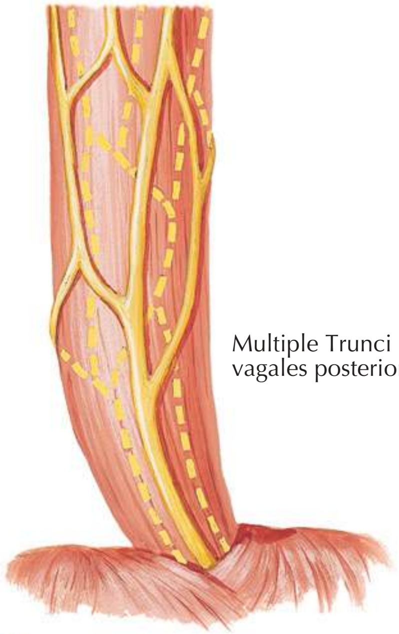
Posterior interventricular (posterior descending) branch is absent. Area is supplied chiefly by small branches from circumflex branch of left coronary artery and from right coronary artery.

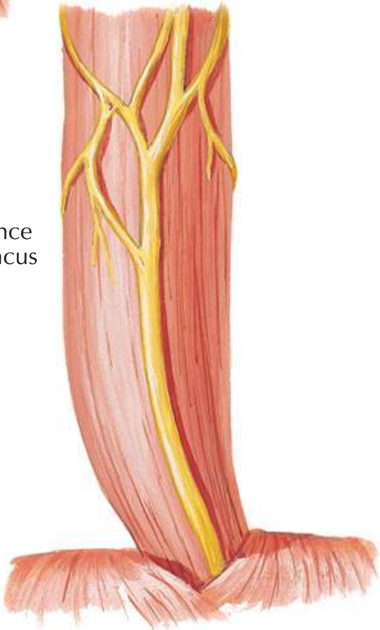


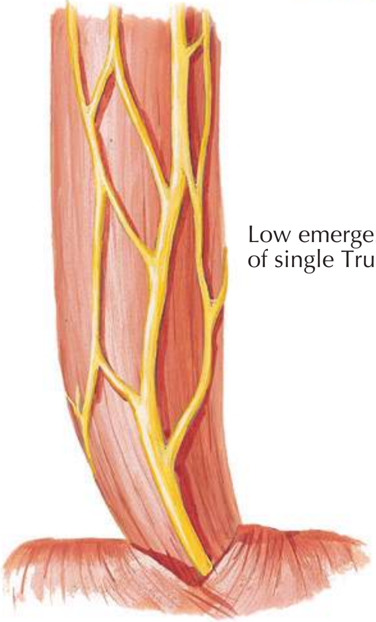
Posterior interventricular (posterior descending) branch is absent. Area is supplied chiefly by elongated anterior interventricular (left anterior descending) branch curving around apex of heart.

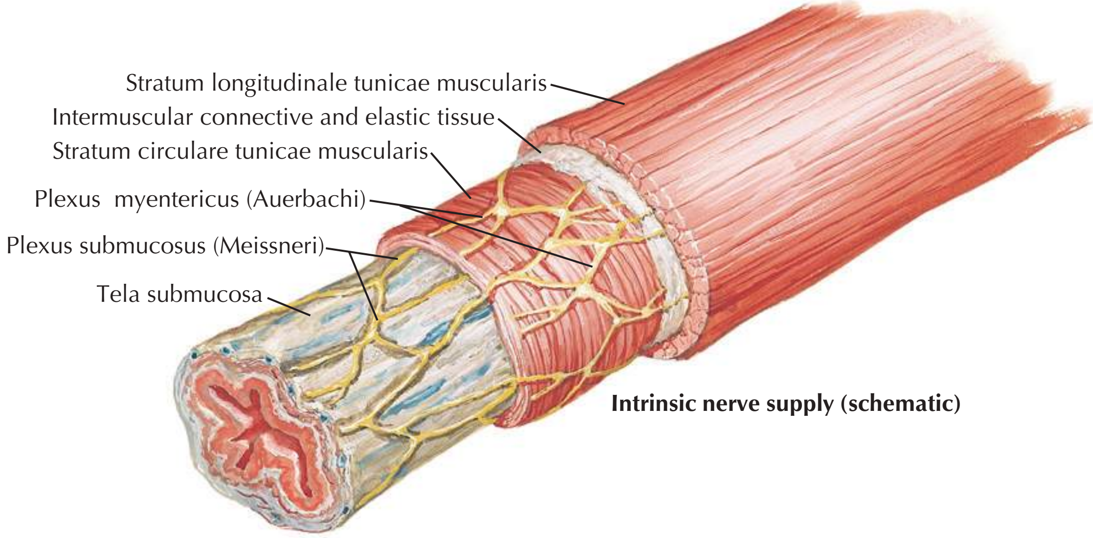

Multiple Trunci vagales anteriores


Single Truncus vagalis anterior dividing just above Diaphragma

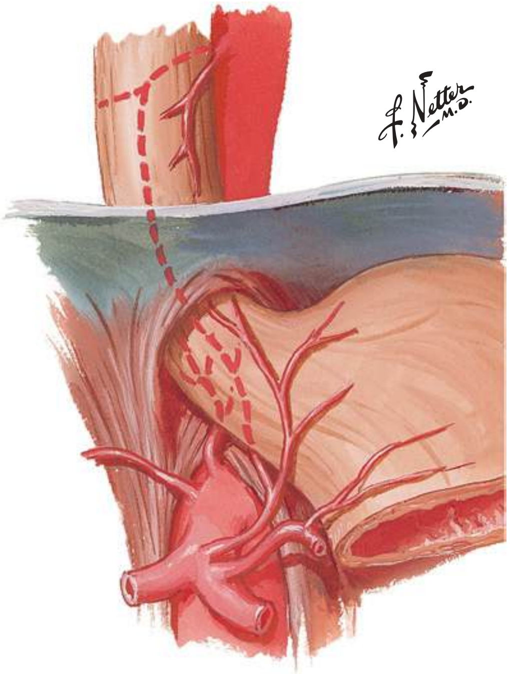

Multiple Trunci vagales posteriores


High emergence of single Truncus


Low emergence of single Truncus

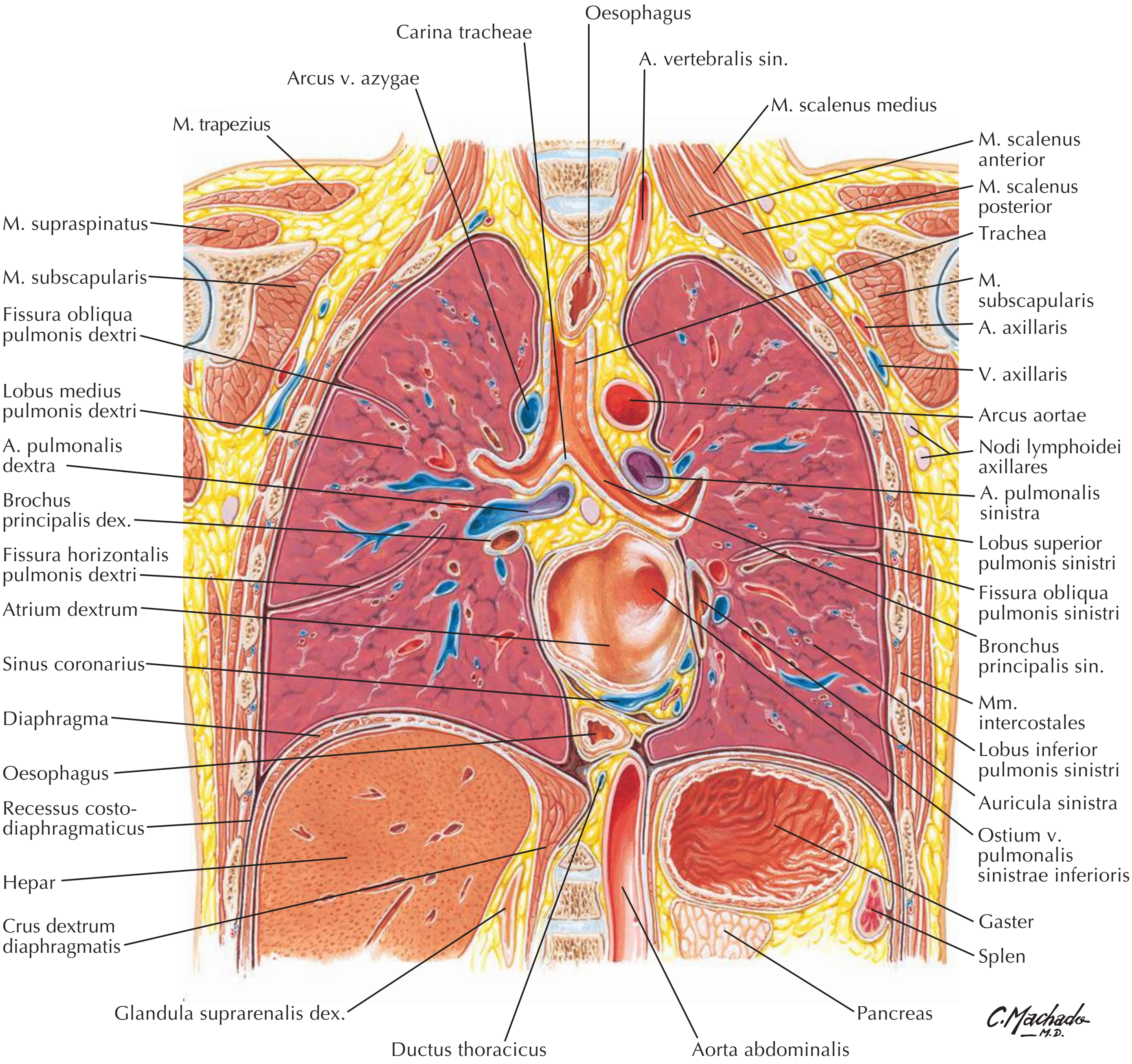

Stratum longitudinale tunicae muscularis
Intermuscular connective and elastic tissue
Stratum circulare tunicae muscularis
Plexus myentericus (Auerbachi)
Plexus submucosus (Meissneri)
Tela submucosa

Intrinsic nerve supply (schematic)

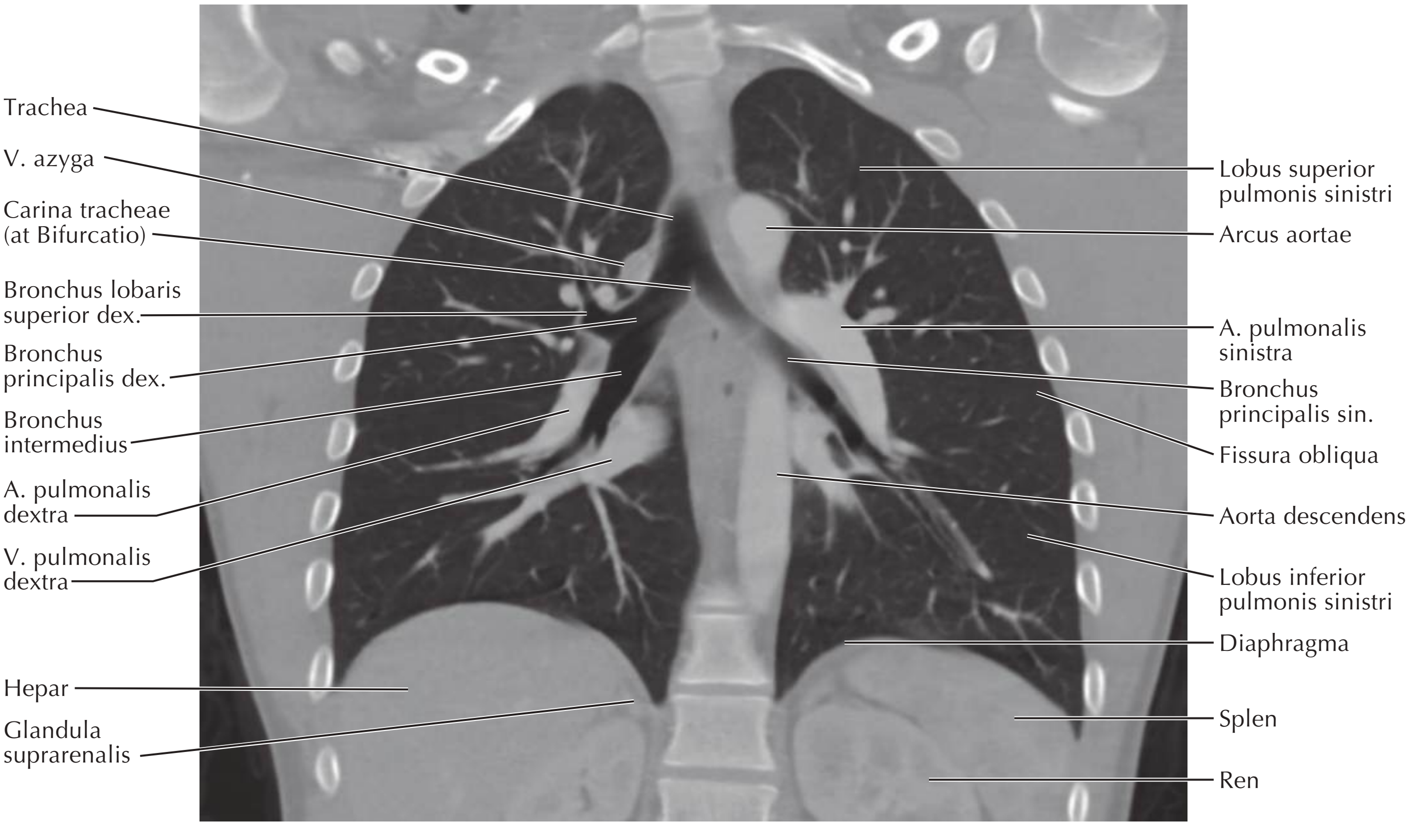


Common variations:
Rr. oesophagei may originate from A. phrenica inferior and/or directly from Truncus coeliacus. Branches to Pars abdominalis oesophagi may also come from A. splenica or Aa. gastricae breves.

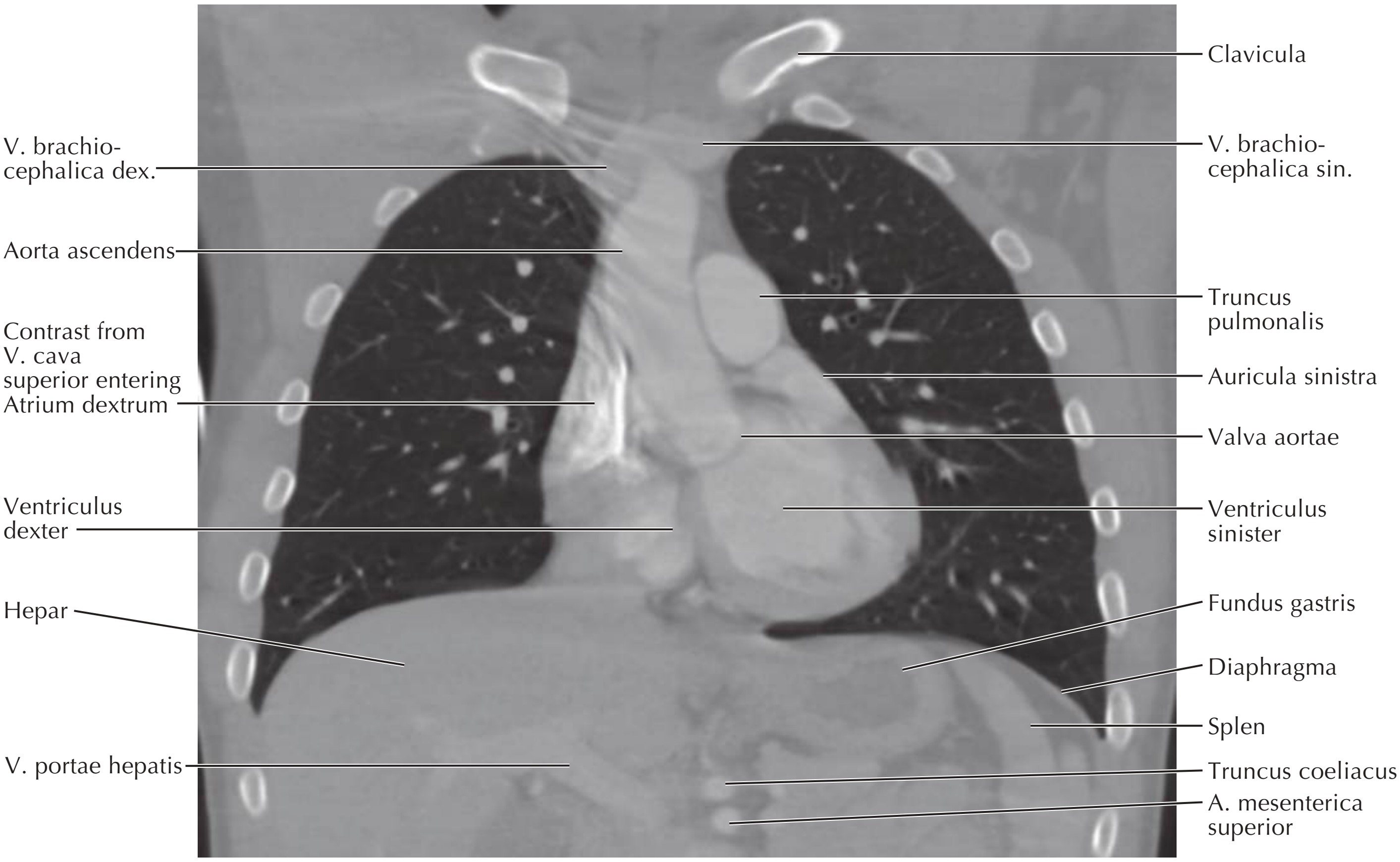
Thorax: Coronal Section (Midaxillary Line, Tracheal Bifurcation, Left Atrium)


Oesophagus
Carina tracheae
A. vertebralis sin.
Arcus v. azygae
M. scalenus medius
M. trapezius
M. scalenus anterior
M. scalenus posterior
M. supraspinatus
Trachea
M. subscapularis
M. subscapularis
A. axillaris
Fissura obliqua pulmonis dextri
V. axillaris
Lobus medius pulmonis dextri
Arcus aortae
Nodi lymphoidei axillares
A. pulmonalis dextra
A. pulmonalis sinistra
Brochus principalis dex.
Lobus superior pulmonis sinistri
Fissura horizontalis pulmonis dextri
Fissura obliqua pulmonis sinistri
Atrium dextrum
Bronchus principalis sin.
Sinus coronarius
Mm. intercostales
Diaphragma
Lobus inferior pulmonis sinistri
Oesophagus
Auricula sinistra
Recessus costo-diaphragmaticus
Ostium v. pulmonalis sinistrae inferioris
Hepar
Gaster
Crus dextrum diaphragmatis
Splen
Glandula suprarenalis dex.
Pancreas
Ductus thoracicus
Aorta abdominalis
C.Machado M.D.

Contrast windowed to accentuate lungs and bones


Trachea
V. azyga
Carina tracheae (at Bifurcatio)
Bronchus lobaris superior dex.
Bronchus principalis dex.
Bronchus intermedius
A. pulmonalis dextra
V. pulmonalis dextra
Hepar
Glandula suprarenalis
Lobus superior pulmonis sinistri
Arcus aortae
A. pulmonalis sinistra
Bronchus principalis sin.
Fissura obliqua
Aorta descendens
Lobus inferior pulmonis sinistri
Diaphragma
Splen
Ren

Contrast windowed to accentuate lungs and bones


Clavicula
V. brachiocephalica dex.
V. brachiocephalica sin.
Aorta ascendens
Truncus pulmonalis
Contrast from V. cava superior entering Atrium dextrum
Auricula sinistra
Valva aortae
Ventriculus dexter
Ventriculus sinister
Hepar
Fundus gastris
Diaphragma
Splen
V. portae hepatis
Truncus coeliacus
A. mesenterica superior

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ABDOMEN

5

Surface Anatomy	249
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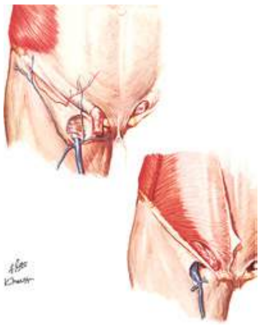
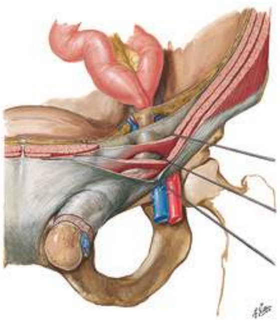
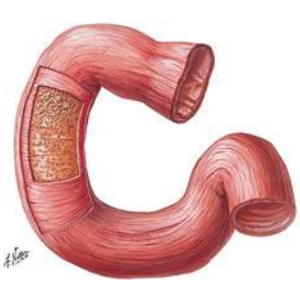
Electronic Bonus Plates	BP58-BP87

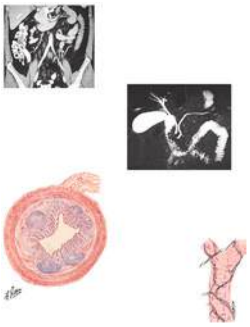
ELECTRONIC BONUS PLATES

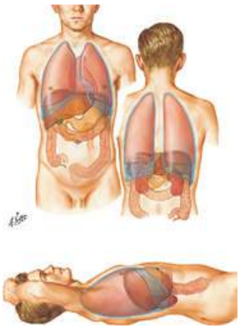

BP58 Inguinal and Femoral Regions

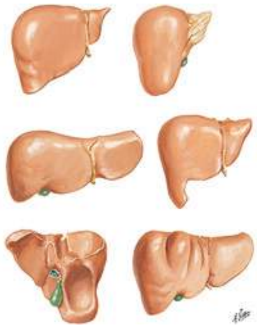

BP59 Indirect Inguinal Hernia

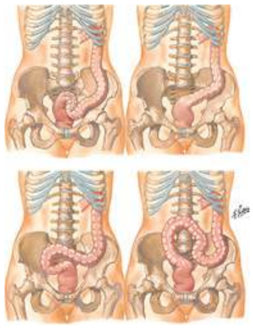
BP60 Variations in Position and Contour of Stomach in Relation to Body Habitus


BP61 Layers of Duodenal Wall

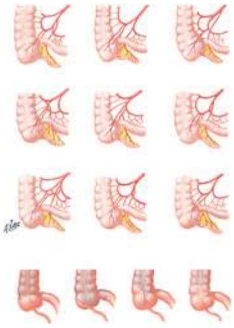

BP62 CT and MRCP Showing Appendix, Gallbladder, and Ducts; Nerve Branches of Hepatic Artery

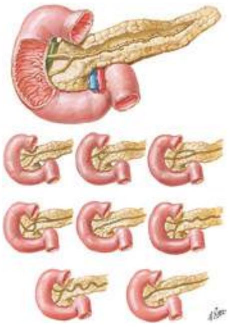

BP63 Topography of Liver

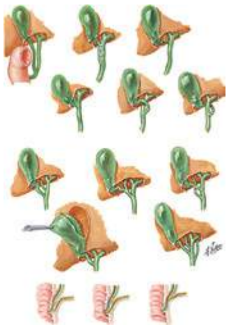

BP64 Variations in Form of Liver

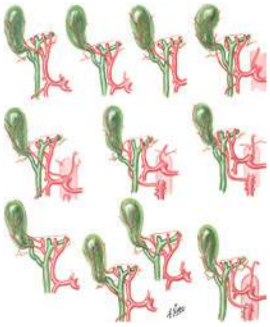

BP65 Sigmoid Colon: Variations in Position

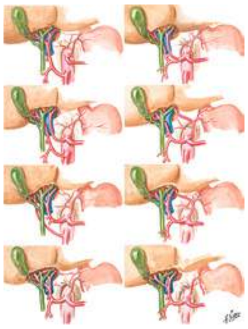
ELECTRONIC BONUS PLATES—*cont'd*

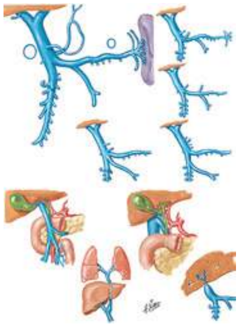

BP66 Variations in Arterial Supply to Cecum and Posterior Peritoneal Attachment of Cecum

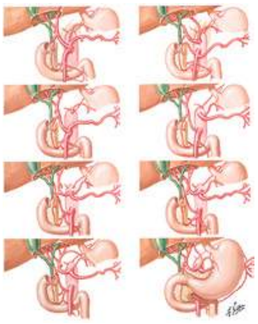

BP67 Variations in Pancreatic Duct

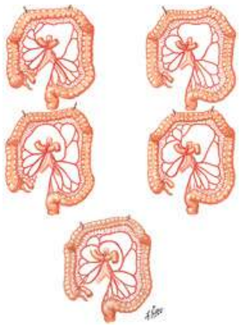

BP68 Variations in Cystic, Hepatic, and Pancreatic Ducts

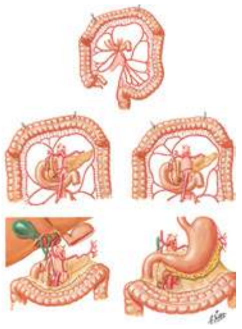

BP69 Variations in Cystic Artery

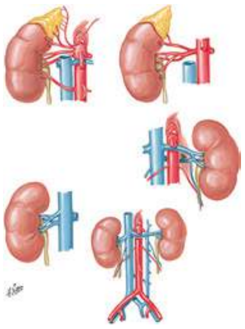

BP70 Variations in Hepatic Artery

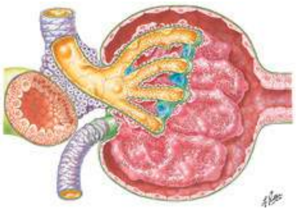

BP71 Variations and Anomalies of Hepatic Portal Vein

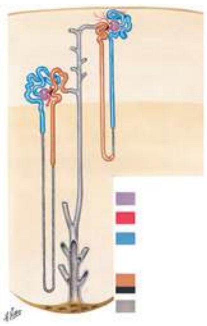

BP72 Variations in Celiac Trunk


BP73 Variations in Colic Artery

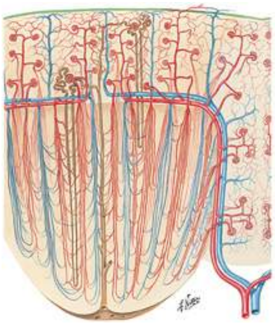

BP74 Variations in Colic Artery (continued)


BP75 Variations in Renal Artery and Vein

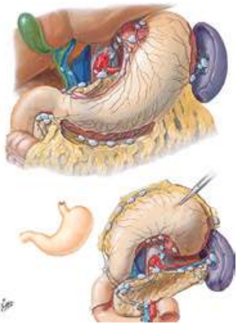

BP76 Histology of Renal Corpuscle


BP77 Nephron and Collecting Tubule: Schema

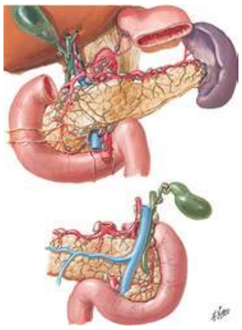
ELECTRONIC BONUS PLATES—*cont'd*



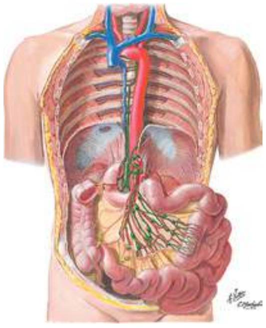
BP78 Blood Vessels in Parenchyma of Kidney: Schema



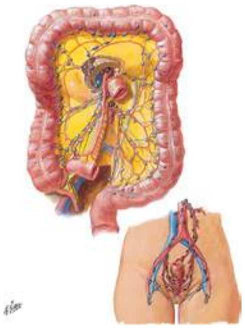
BP79 Lymph Vessels and Nodes of Stomach



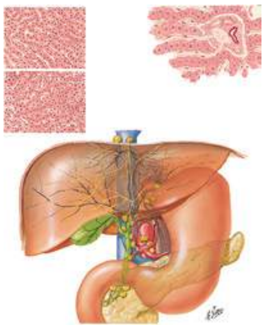
BP80 Lymph Vessels and Nodes of Pancreas



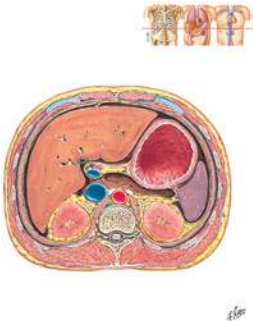
BP81 Lymph Vessels and Nodes of Small Intestine



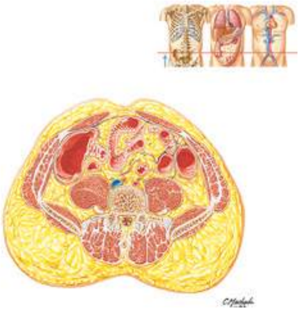
BP82 Lymph Vessels and Nodes of Large Intestine



BP83 Lymph Vessels and Nodes of Liver



BP84 Schematic Cross Section of Abdomen at Middle T12



BP85 Transverse Section of Abdomen: Level of L5, Near Transtubercular Plane

BP86 Transverse Section of Abdomen: Level of S1, Anterior Superior Iliac Spine

BP87 Axial CT Image of Upper Abdomen

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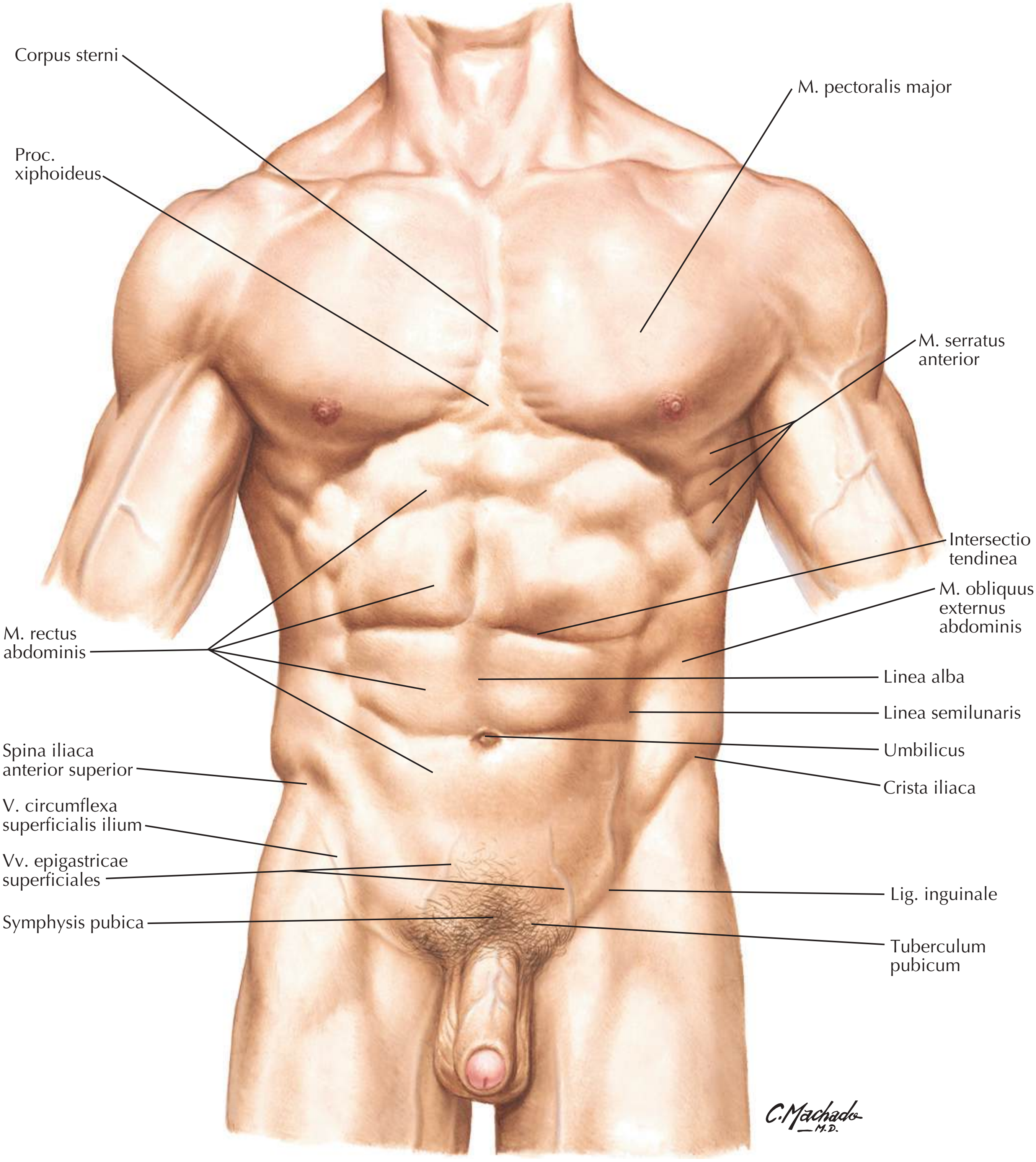
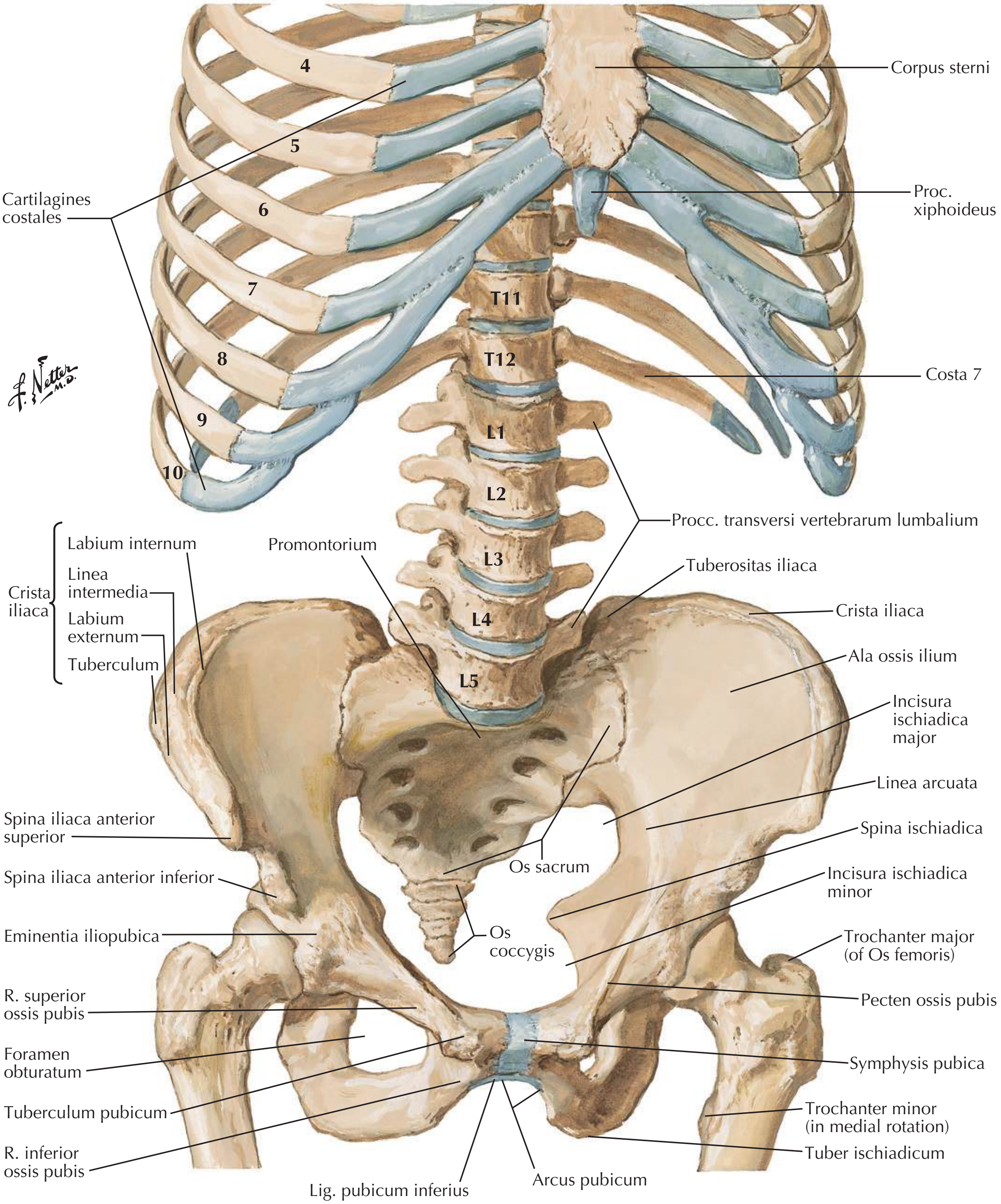

Corpus sterni
Proc. xiphoideus
M. pectoralis major
M. serratus anterior
Intersectio tendinea
M. obliquus externus abdominis
M. rectus abdominis
Linea alba
Linea semilunaris
Umbilicus
Crista iliaca
Spina iliaca anterior superior
V. circumflexa superficialis ilium
Vv. epigastricae superficiales
Lig. inguinale
Symphysis pubica
Tuberculum pubicum
C.Machado M.D.

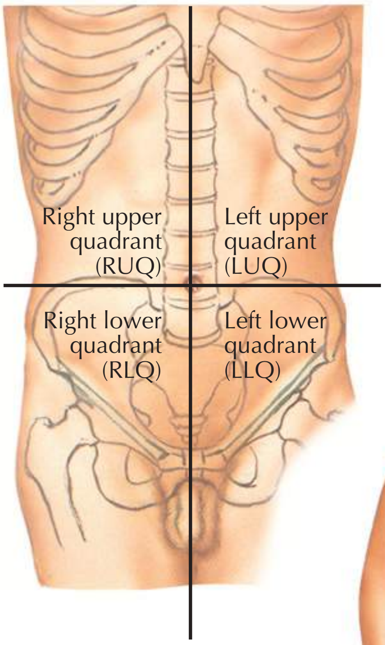
Bony Framework of Abdomen

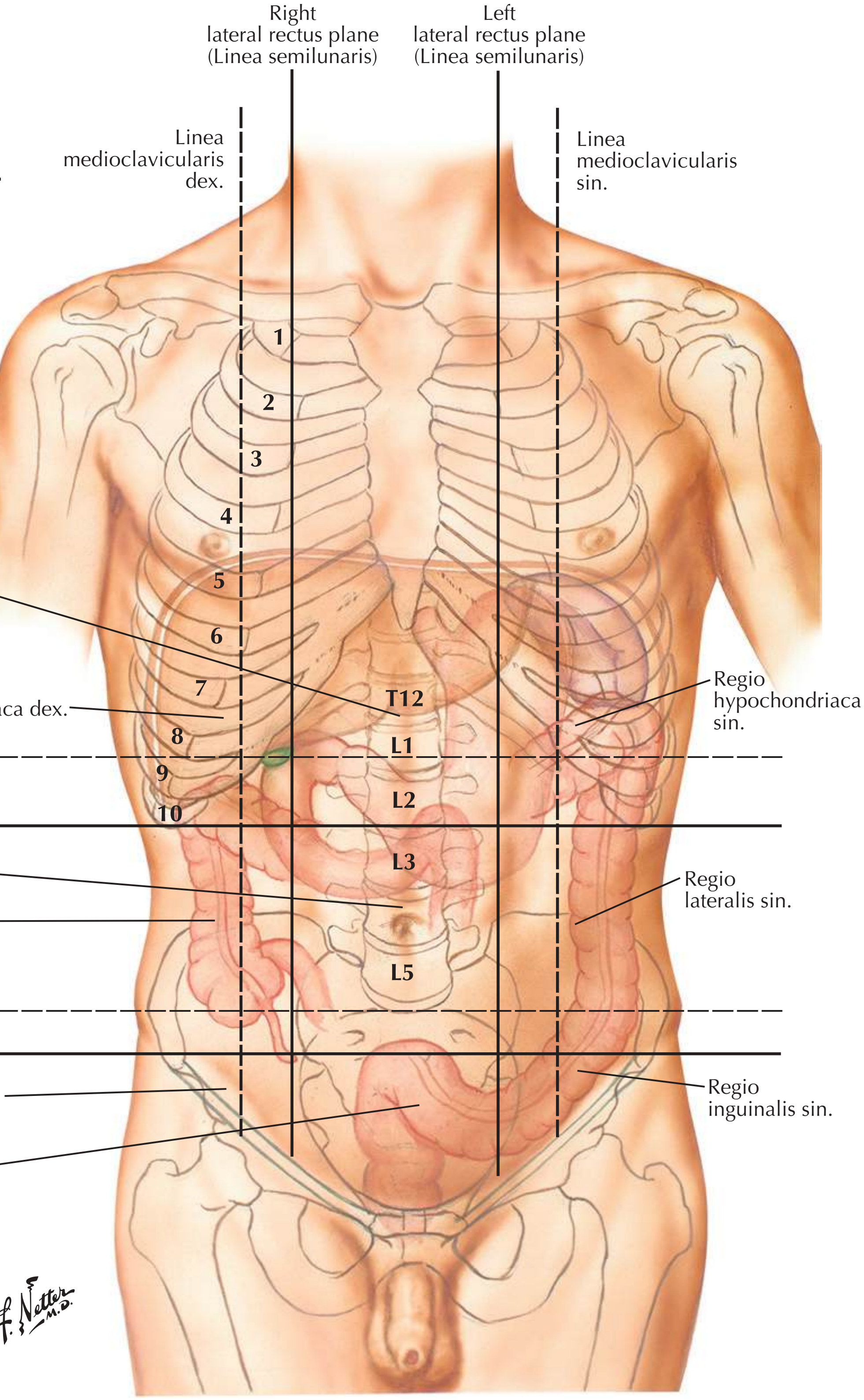
See also Plates 192, 334


4
5
6
7
8
9
10
T11
T12
L1
L2
L3
L4
L5
Corpus sterni
Cartilagines costales
Proc. xiphoideus
Costa 7
Procc. transversi vertebrarum lumbalium
Crista iliaca
Labium internum
Linea intermedia
Labium externum
Tuberculum
Promontorium
Tuberositas iliaca
Crista iliaca
Ala ossis ilium
Incisura ischiadica major
Linea arcuata
Spina ischiadica
Spina iliaca anterior superior
Spina iliaca anterior inferior
Os sacrum
Incisura ischiadica minor
Eminentia iliopubica
Os coccygis
Trochanter major (of Os femoris)
Pecten ossis pubis
R. superior ossis pubis
Foramen obturatum
Symphysis pubica
Tuberculum pubicum
Trochanter minor (in medial rotation)
R. inferior ossis pubis
Tuber ischiadicum
Lig. pubicum inferius
Arcus pubicum

Regions and Planes of Abdomen

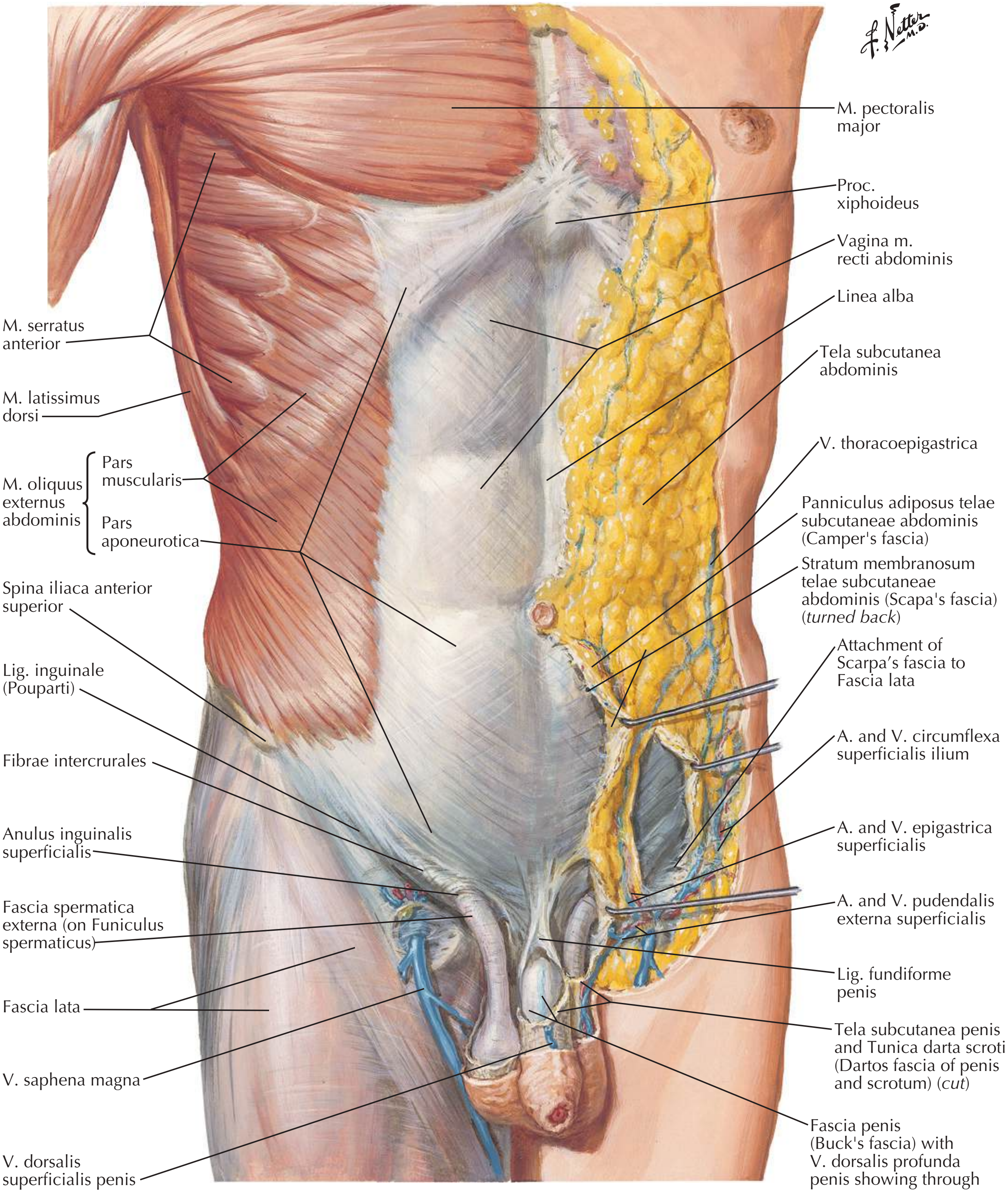
See also Plate 202


Right upper quadrant (RUQ)
Left upper quadrant (LUQ)
Right lower quadrant (RLQ)
Left lower quadrant (LLQ)


Right lateral rectus plane (Linea semilunaris)
Left lateral rectus plane (Linea semilunaris)
Linea medioclavicularis dex.
Linea medioclavicularis sin.
1
2
3
4
5
6
7
8
9
10
Regio epigastrica
T12
Regio hypochondriaca dex.
Regio hypochondriaca sin.
Planum transpyloricum
L1
L2
Planum subcostale
L3
Regio umblicalis
Regio lateralis dex.
Regio lateralis sin.
L5
Planum intertuberculare
Planum interspinale
Regio inguinalis dex.
Regio inguinalis sin.
Regio hypogastrica (Regio pubica)
F. Netter M.D.

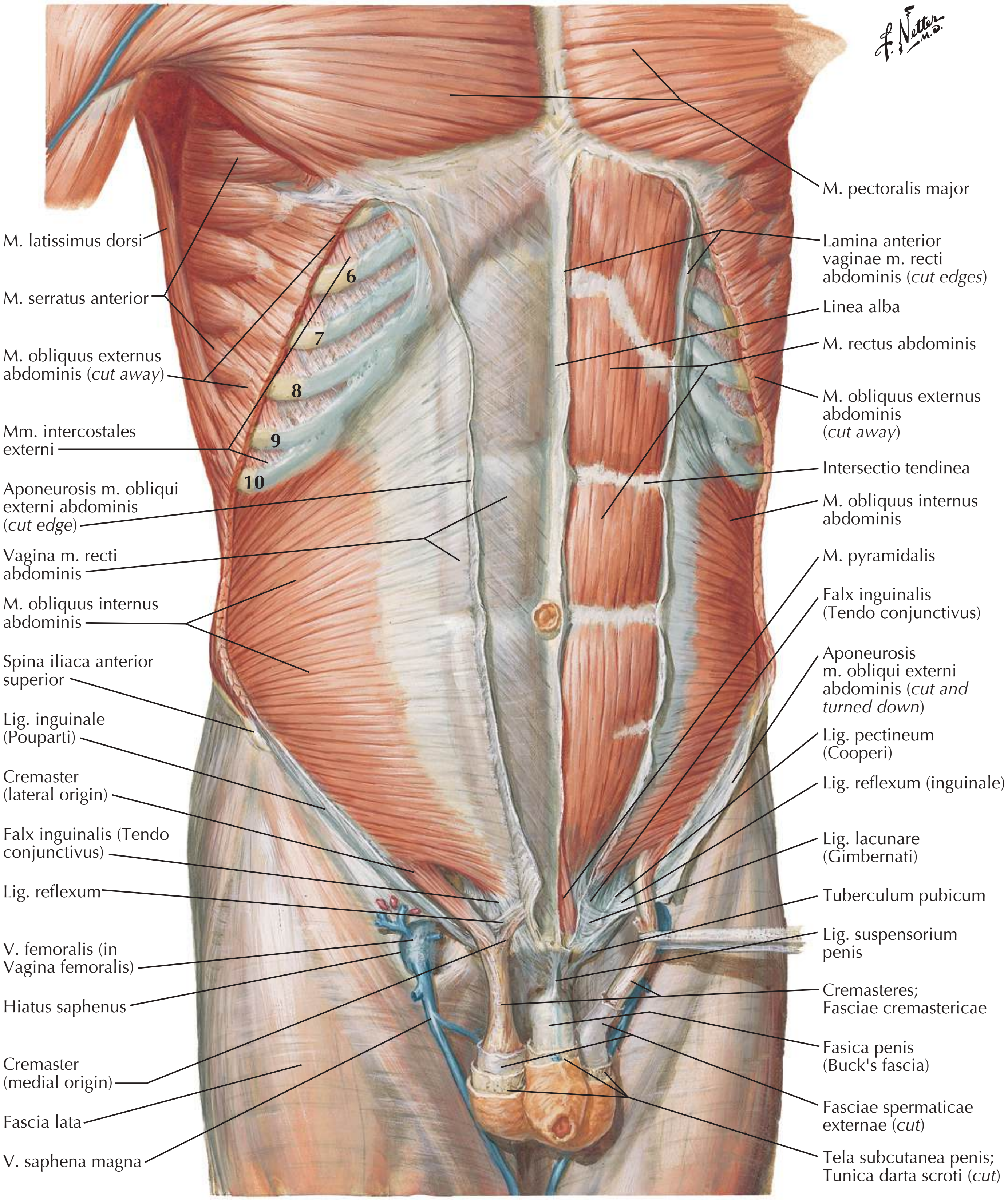
Anterior Abdominal Wall: Superficial Dissection

See also Plates 259, 333


M. pectoralis major
Proc. xiphoideus
Vagina m. recti abdominis
Linea alba
Tela subcutanea abdominis
V. thoracoepigastrica
Panniculus adiposus telae subcutaneae abdominis (Camper's fascia)
Stratum membranosum telae subcutaneae abdominis (Scapa's fascia) (*turned back*)
Attachment of Scarpa's fascia to Fascia lata
A. and V. circumflexa superficialis ilium
A. and V. epigastrica superficialis
A. and V. pudendalis externa superficialis
Lig. fundiforme penis
Tela subcutanea penis and Tunica darta scroti (Dartos fascia of penis and scrotum) (*cut*)
Fascia penis (Buck's fascia) with V. dorsalis profunda penis showing through
M. serratus anterior
M. latissimus dorsi
M. oliquus externus abdominis
Pars muscularis
Pars aponeurotica
Spina iliaca anterior superior
Lig. inguinale (Pouparti)
Fibrae intercrurales
Anulus inguinalis superficialis
Fascia spermatica externa (on Funiculus spermaticus)
Fascia lata
V. saphena magna
V. dorsalis superficialis penis

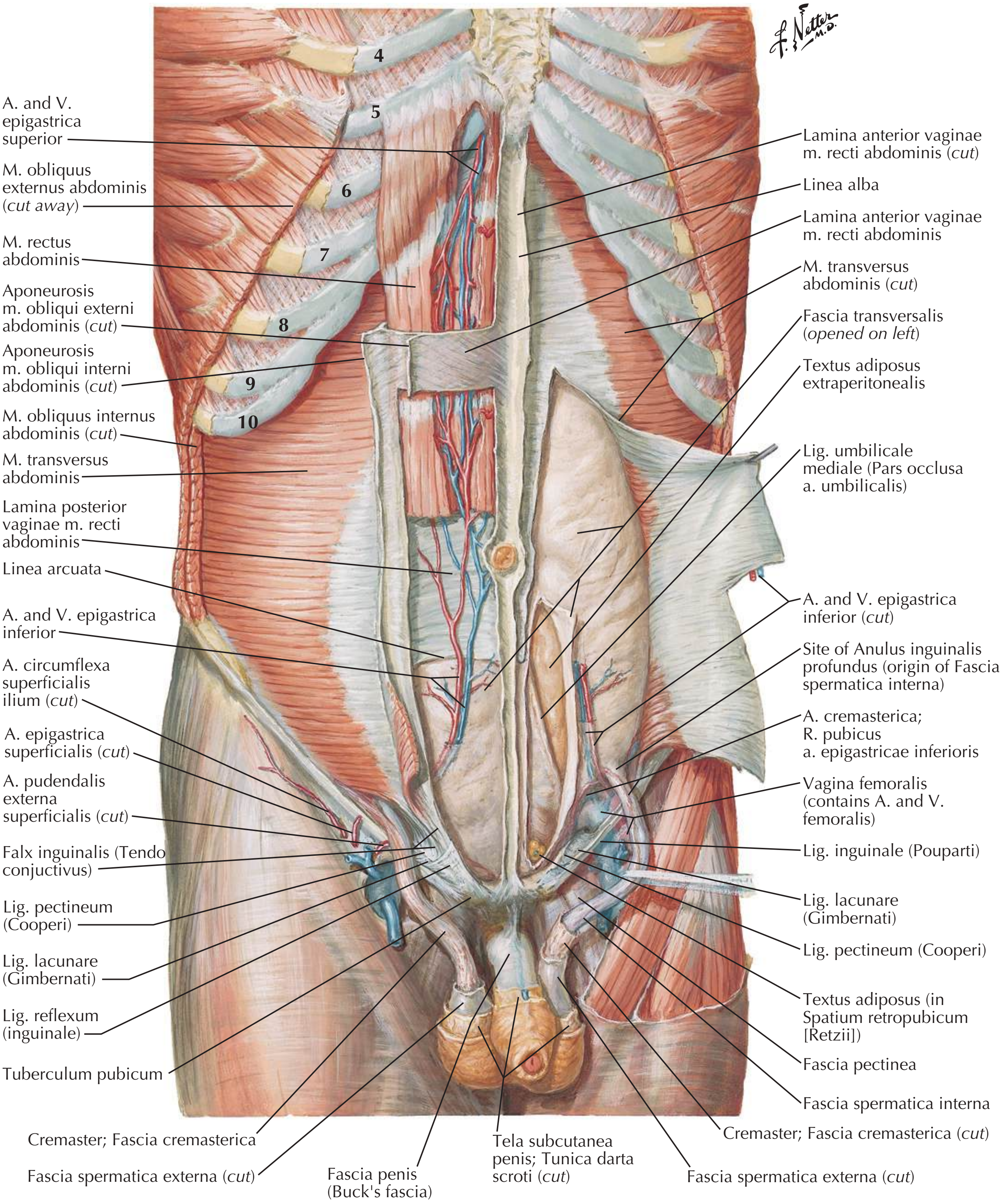
Anterior Abdominal Wall: Intermediate Dissection

See also Plates 194, 195

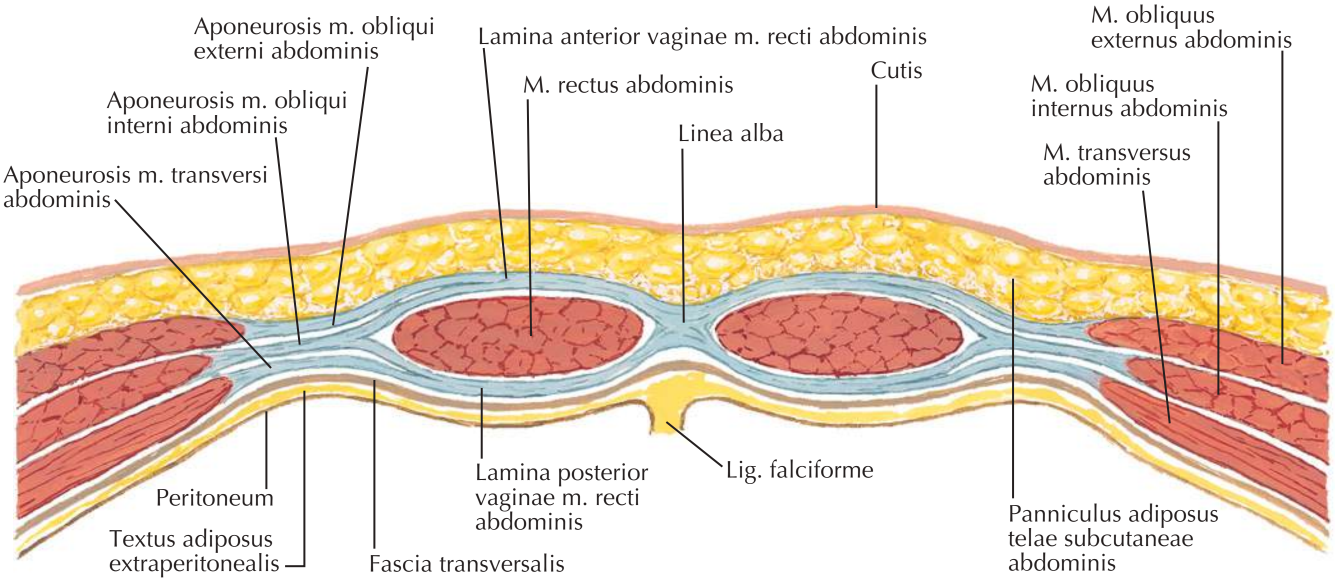

M. latissimus dorsi
M. serratus anterior
M. obliquus externus abdominis (*cut away*)
Mm. intercostales externi
6
7
8
9
10
Aponeurosis m. obliqui externi abdominis (*cut edge*)
Vagina m. recti abdominis
M. obliquus internus abdominis
Spina iliaca anterior superior
Lig. inguinale (Pouparti)
Cremaster (lateral origin)
Falx inguinalis (Tendo conjunctivus)
Lig. reflexum
V. femoralis (in Vagina femoralis)
Hiatus saphenus
Cremaster (medial origin)
Fascia lata
V. saphena magna
M. pectoralis major
Lamina anterior vaginae m. recti abdominis (*cut edges*)
Linea alba
M. rectus abdominis
M. obliquus externus abdominis (*cut away*)
Intersectio tendinea
M. obliquus internus abdominis
M. pyramidalis
Falx inguinalis (Tendo conjunctivus)
Aponeurosis m. obliqui externi abdominis (*cut and turned down*)
Lig. pectineum (Cooperi)
Lig. reflexum (inguinale)
Lig. lacunare (Gimbernati)
Tuberculum pubicum
Lig. suspensorium penis
Cremasteres; Fasciae cremastericae
Fasica penis (Buck's fascia)
Fasciae spermaticae externae (*cut*)
Tela subcutanea penis; Tunica darta scroti (*cut*)
F. Netter M.D.

Anterior Abdominal Wall: Deep Dissection

See also Plates 195, 258

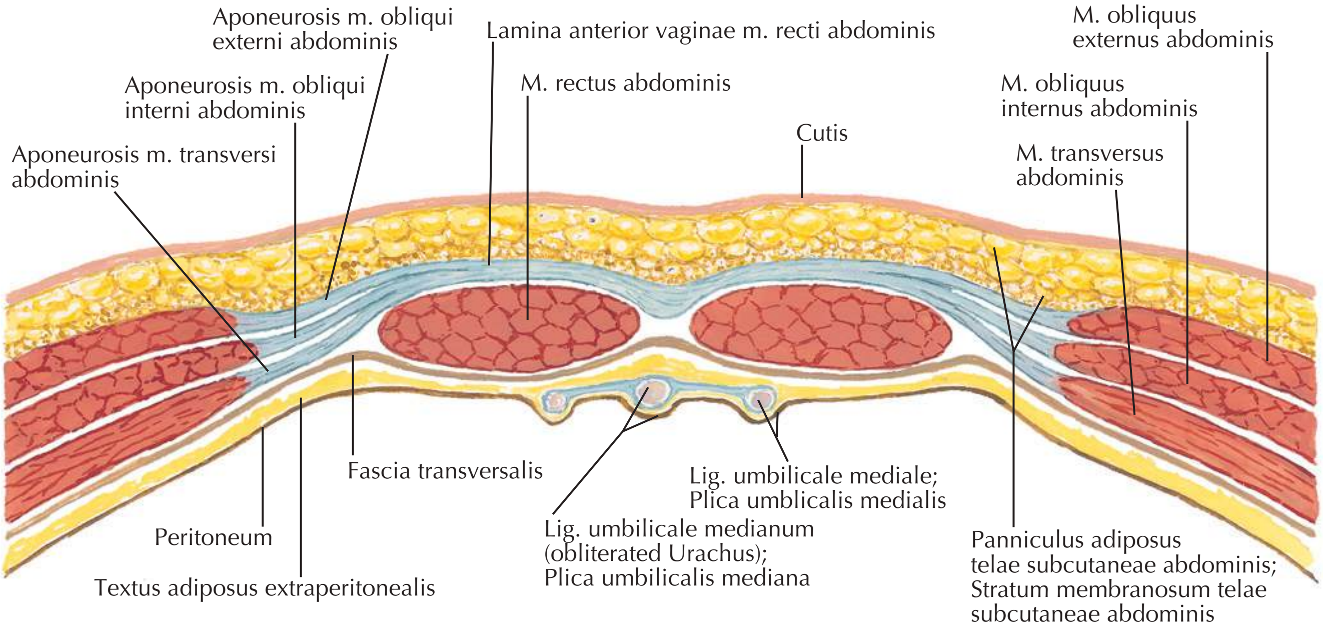

4
5
6
7
8
9
10
A. and V. epigastrica superior
M. obliquus externus abdominis (*cut away*)
M. rectus abdominis
Aponeurosis m. obliqui externi abdominis (*cut*)
Aponeurosis m. obliqui interni abdominis (*cut*)
M. obliquus internus abdominis (*cut*)
M. transversus abdominis
Lamina posterior vaginae m. recti abdominis
Linea arcuata
A. and V. epigastrica inferior
A. circumflexa superficialis ilium (*cut*)
A. epigastrica superficialis (*cut*)
A. pudendalis externa superficialis (*cut*)
Falx inguinalis (Tendo conjuctivus)
Lig. pectineum (Cooperi)
Lig. lacunare (Gimbernati)
Lig. reflexum (inguinale)
Tuberculum pubicum
Cremaster; Fascia cremasterica
Fascia spermatica externa (*cut*)
Fascia penis (Buck's fascia)
Tela subcutanea penis; Tunica darta scroti (*cut*)
Fascia spermatica externa (*cut*)
Cremaster; Fascia cremasterica (*cut*)
Fascia spermatica interna
Fascia pectinea
Textus adiposus (in Spatium retropubicum [Retzii])
Lig. pectineum (Cooperi)
Lig. lacunare (Gimbernati)
Lig. inguinale (Pouparti)
Vagina femoralis (contains A. and V. femoralis)
A. cremasterica; R. pubicus a. epigastricae inferioris
Site of Anulus inguinalis profundus (origin of Fascia spermatica interna)
A. and V. epigastrica inferior (*cut*)
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Textus adiposus extraperitonealis
Fascia transversalis (*opened on left*)
M. transversus abdominis (*cut*)
Lamina anterior vaginae m. recti abdominis
Linea alba
Lamina anterior vaginae m. recti abdominis (*cut*)

Section above Linea arcuata


Aponeurosis m. obliqui externi abdominis
Aponeurosis m. obliqui interni abdominis
Aponeurosis m. transversi abdominis
Lamina anterior vaginae m. recti abdominis
M. rectus abdominis
Linea alba
Cutis
M. obliquus externus abdominis
M. obliquus internus abdominis
M. transversus abdominis
Peritoneum
Textus adiposus extraperitonealis
Fascia transversalis
Lamina posterior vaginae m. recti abdominis
Lig. falciforme
Panniculus adiposus telae subcutaneae abdominis

Aponeurosis m. obliqui interni abdominis splits to form anterior and posterior laminae of Vagina m. recti abdominis. Aponeurosis m. obliqui externi abdominis joins anterior lamina of rectus sheath; Aponeurosis m. transversi abdominis joins posterior lamina. Anterior and posterior laminae of Vagina m. recti abdominis unite medially to form Linea alba.

Section below Linea arcuata

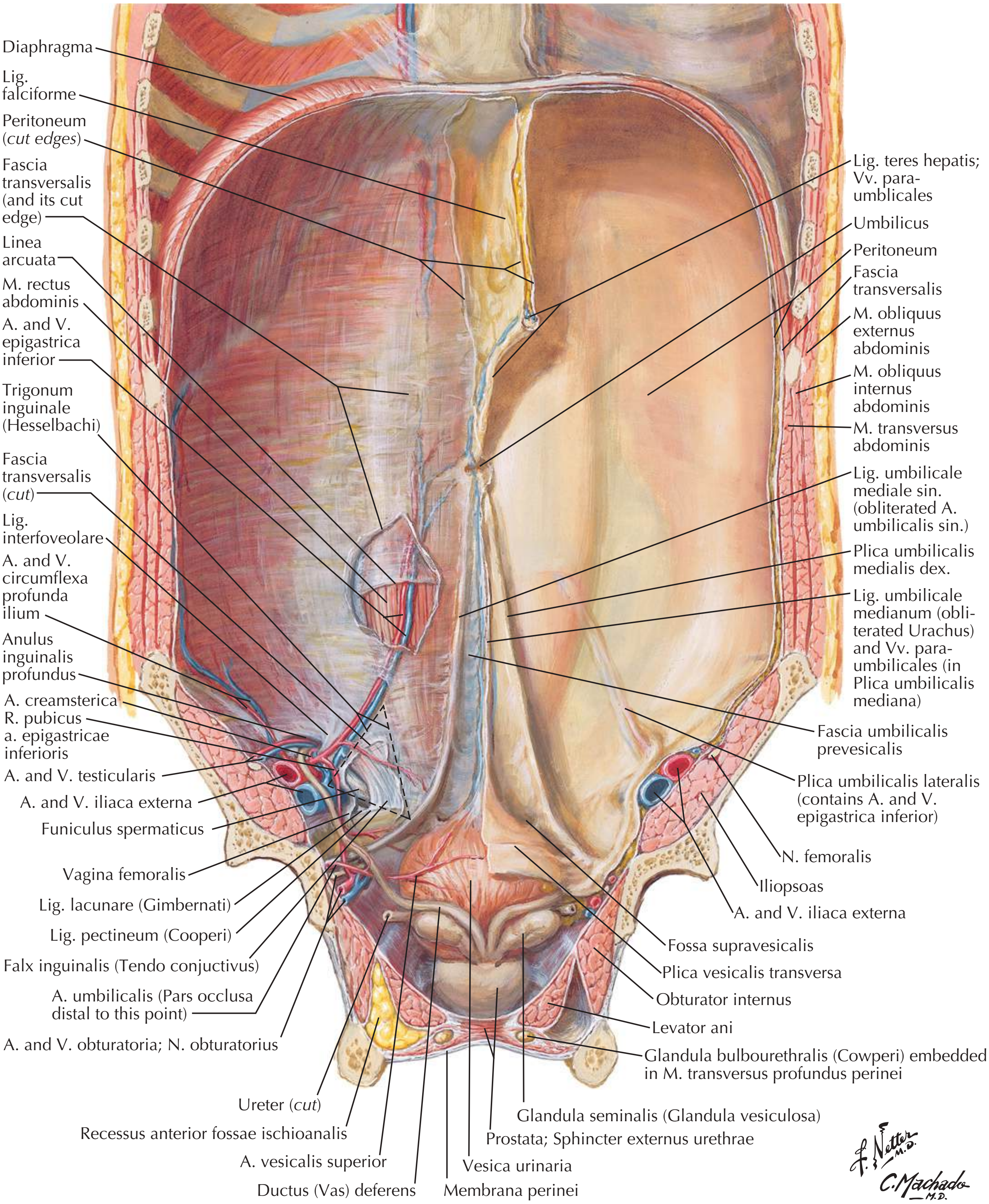

Aponeurosis m. obliqui externi abdominis
Aponeurosis m. obliqui interni abdominis
Aponeurosis m. transversi abdominis
Lamina anterior vaginae m. recti abdominis
M. rectus abdominis
Cutis
M. obliquus externus abdominis
M. obliquus internus abdominis
M. transversus abdominis
Fascia transversalis
Peritoneum
Textus adiposus extraperitonealis
Lig. umbilicale mediale; Plica umblicalis medialis
Lig. umbilicale medianum (obliterated Urachus); Plica umbilicalis mediana
Panniculus adiposus telae subcutaneae abdominis; Stratum membranosum telae subcutaneae abdominis

Aponeurosis m. obliqui externi abdominis does not split at this level but passes completely anterior to M. rectus abdominis and is fused there with both Aponeurosis m. obliqui externi abdominis and that of M. transversus abdominis. Thus, posterior lamina of Vagina m. recti abdominis is absent below Linea arcuata, leaving only Fascia transversalis.

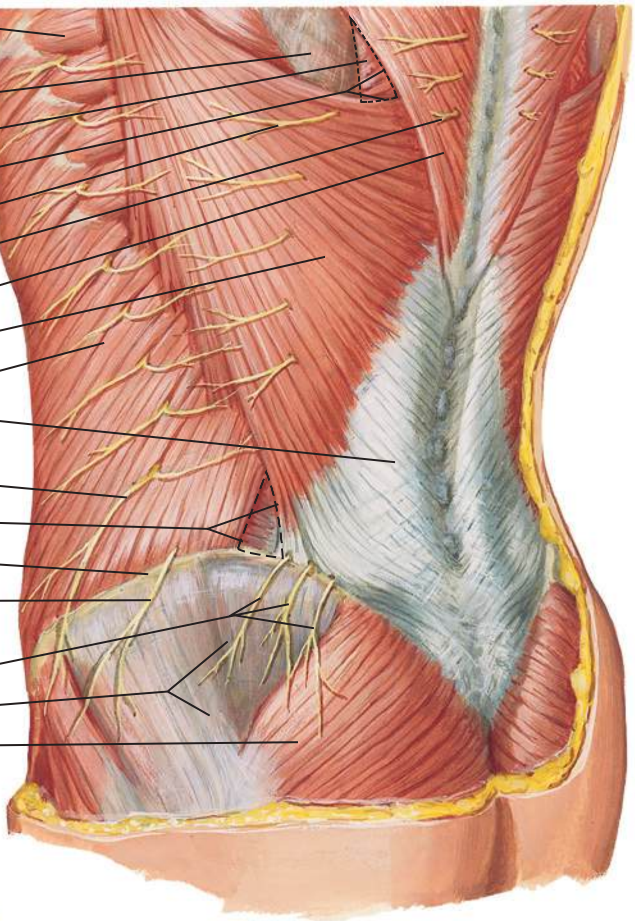
F. Netter M.D.

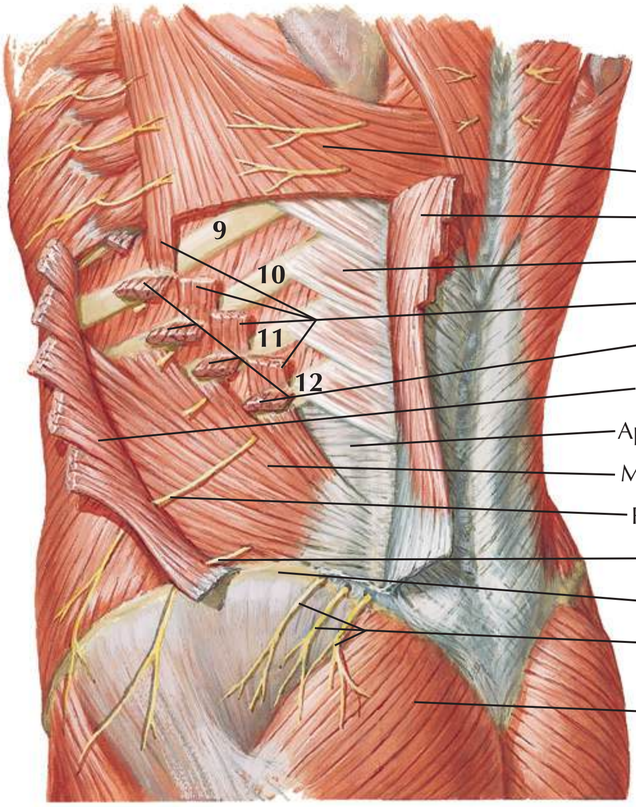
Anterior Abdominal Wall: Internal View

See also Plate 366

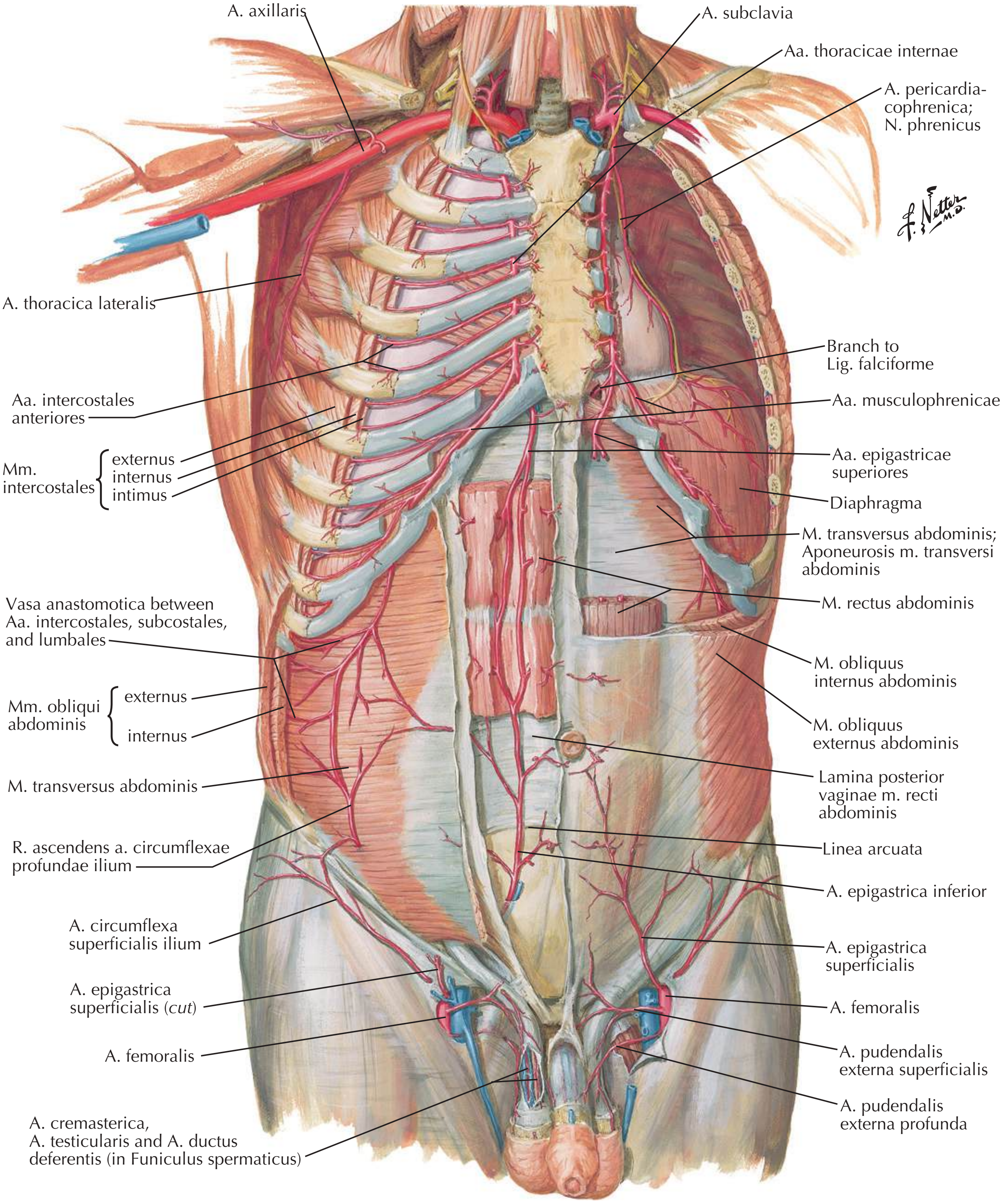


Diaphragma
Lig. falciforme
Peritoneum (*cut edges*)
Fascia transversalis (and its cut edge)
Linea arcuata
M. rectus abdominis
A. and V. epigastrica inferior
Trigonum inguinale (Hesselbachi)
Fascia transversalis (*cut*)
Lig. interfoveolare
A. and V. circumflexa profunda ilium
Anulus inguinalis profundus
A. creamsterica
R. pubicus a. epigastricae inferioris
A. and V. testicularis
A. and V. iliaca externa
Funiculus spermaticus
Vagina femoralis
Lig. lacunare (Gimbernati)
Lig. pectineum (Cooperi)
Falx inguinalis (Tendo conjuctivus)
A. umbilicalis (Pars occlusa distal to this point)
A. and V. obturatoria; N. obturatorius
Ureter (*cut*)
Recessus anterior fossae ischioanalis
A. vesicalis superior
Ductus (Vas) deferens
Membrana perinei
Vesica urinaria
Prostata; Sphincter externus urethrae
Glandula seminalis (Glandula vesiculosa)
Lig. teres hepatis; Vv. para-umblicales
Umbilicus
Peritoneum
Fascia transversalis
M. obliquus externus abdominis
M. obliquus internus abdominis
M. transversus abdominis
Lig. umbilicale mediale sin. (obliterated A. umbilicalis sin.)
Plica umbilicalis medialis dex.
Lig. umbilicale medianum (obliterated Urachus) and Vv. para-umbilicales (in Plica umbilicalis mediana)
Fascia umbilicalis prevesicalis
Plica umbilicalis lateralis (contains A. and V. epigastrica inferior)
N. femoralis
Iliopsoas
A. and V. iliaca externa
Fossa supravesicalis
Plica vesicalis transversa
Obturator internus
Levator ani
Glandula bulbourethralis (Cowperi) embedded in M. transversus profundus perinei
F. Netter M.D.
C. Machado M.D.


M. serratus anterior
Fascia infraspinata
M. rhomboideus major
Trigonum auscultationis
R. cutaneus lateralis r. posterioris n. spinalis T7
R. cutaneus medialis r. posterioris n. spinalis T7
M. trapezius
M. latissimus dorsi
M. obliquus externus abdominis
Lamina posterior fasciae thoracolumbalis
R. cutaneus lateralis n. subcostalis (T12)
Trigonum lumbare (Petiti)
Crista iliaca
R. cutaneus lateralis n. iliohypogastrici (L1)
Nn. superiores clunium (Rr. cutanei laterales rr. posteriorum nn. spinalium L1–L3)
Aponeurosis glutea (over M. gluteus medius)
M. gluteus maximus

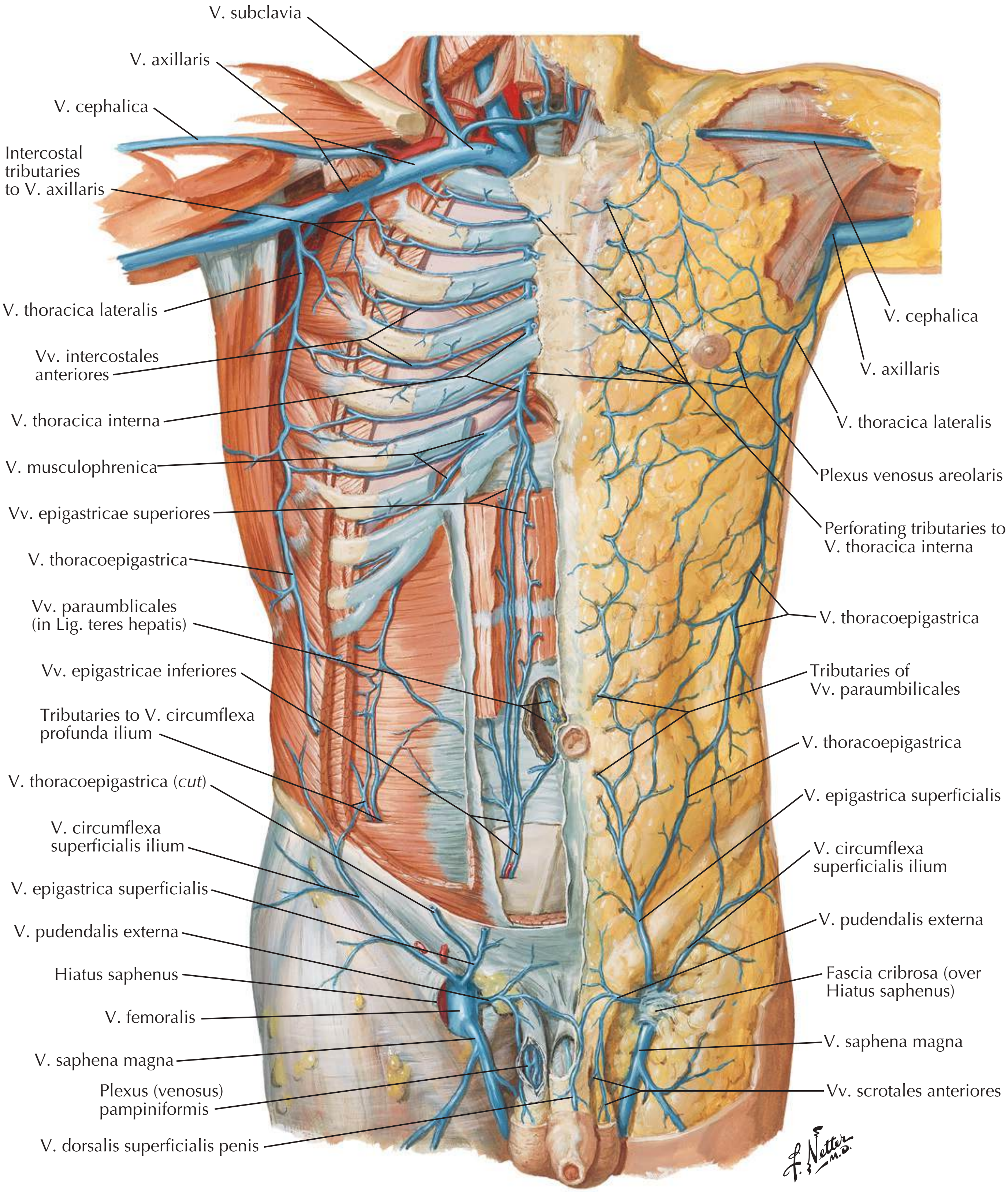

9
10
11
12
M. latissimus dorsi
M. latissimus dorsi (*cut and turned back*)
M. serratus posterior inferior
Digitations of costal origin of M. latissimus dorsi
Digitations of costal origin of M. obliquus externus abdominis
M. obliquus externus abdominis (*cut and turned back*)
Aponeurosis m. transversi abdominis
M. obliquus internus abdominis
R. cutaneus lateralis n. subcostalis (R. anterior n. spinalis T12)
R. cutaneus lateralis n. iliohypogastrici (L1)
Crista iliaca
Nn. superiores clunium (Rr. cutanei laterales rr. posteriorum nn. spinalium L1–L3)
M. gluteus maximus

See also Plate 254

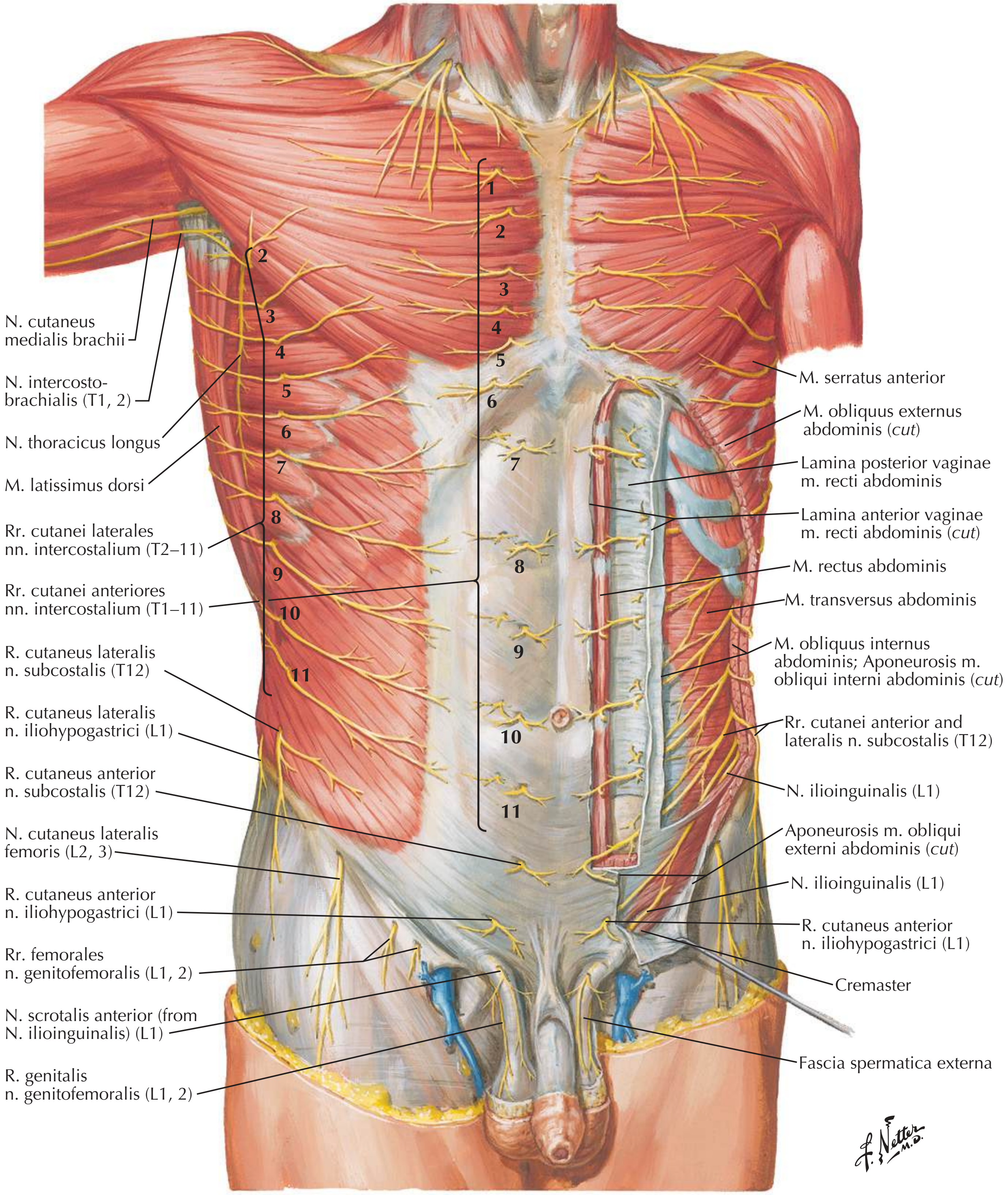

A. axillaris
A. subclavia
Aa. thoracicae internae
A. pericardiacophrenica;
N. phrenicus
A. thoracica lateralis
Branch to
Lig. falciforme
Aa. intercostales
anteriores
Aa. musculophrenicae
Mm.
intercostales
externus
internus
intimus
Aa. epigastricae
superiores
Diaphragma
M. transversus abdominis;
Aponeurosis m. transversi
abdominis
M. rectus abdominis
Vasa anastomotica between
Aa. intercostales, subcostales,
and lumbales
M. obliquus
internus abdominis
Mm. obliqui
abdominis
externus
internus
M. obliquus
externus abdominis
M. transversus abdominis
Lamina posterior
vaginae m. recti
abdominis
R. ascendens a. circumflexae
profundae ilium
Linea arcuata
A. epigastrica inferior
A. circumflexa
superficialis ilium
A. epigastrica
superficialis
A. epigastrica
superficialis (cut)
A. femoralis
A. femoralis
A. pudendalis
externa superficialis
A. pudendalis
externa profunda
A. cremasterica,
A. testicularis and A. ductus
deferentis (in Funiculus spermaticus)
F. Netter M.D.

Veins of Anterior Abdominal Wall

See also Plates 252, 254


V. subclavia
V. axillaris
V. cephalica
Intercostal tributaries to V. axillaris
V. thoracica lateralis
Vv. intercostales anteriores
V. thoracica interna
V. musculophrenica
Vv. epigastricae superiores
V. thoracoepigastrica
Vv. paraumblicales (in Lig. teres hepatis)
Vv. epigastricae inferiores
Tributaries to V. circumflexa profunda ilium
V. thoracoepigastrica (*cut*)
V. circumflexa superficialis ilium
V. epigastrica superficialis
V. pudendalis externa
Hiatus saphenus
V. femoralis
V. saphena magna
Plexus (venosus) pampiniformis
V. dorsalis superficialis penis
V. cephalica
V. axillaris
V. thoracica lateralis
Plexus venosus areolaris
Perforating tributaries to V. thoracica interna
V. thoracoepigastrica
Tributaries of Vv. paraumbilicales
V. thoracoepigastrica
V. epigastrica superficialis
V. circumflexa superficialis ilium
V. pudendalis externa
Fascia cribrosa (over Hiatus saphenus)
V. saphena magna
Vv. scrotales anteriores

See also Plates 186, 194, 261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7
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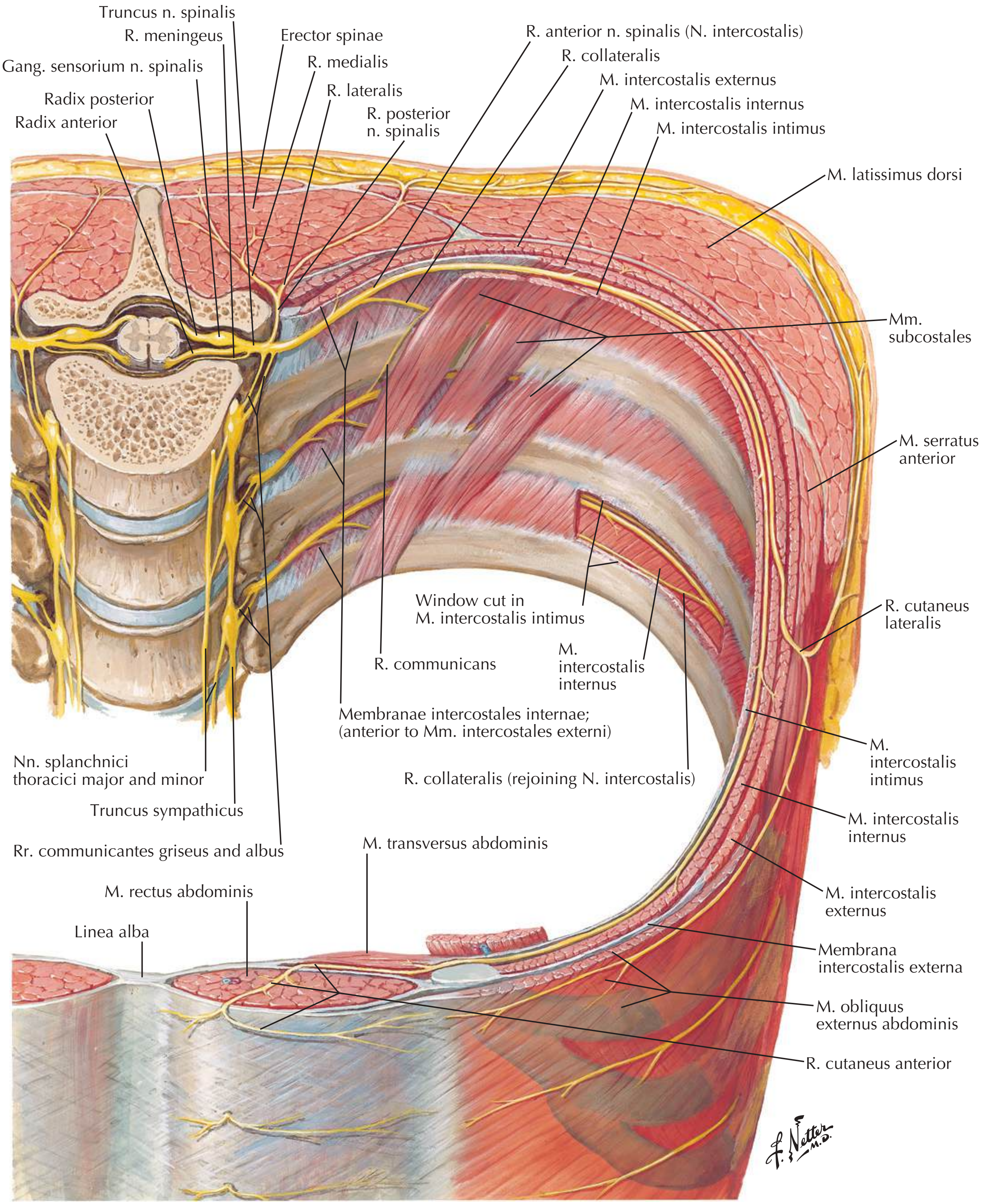
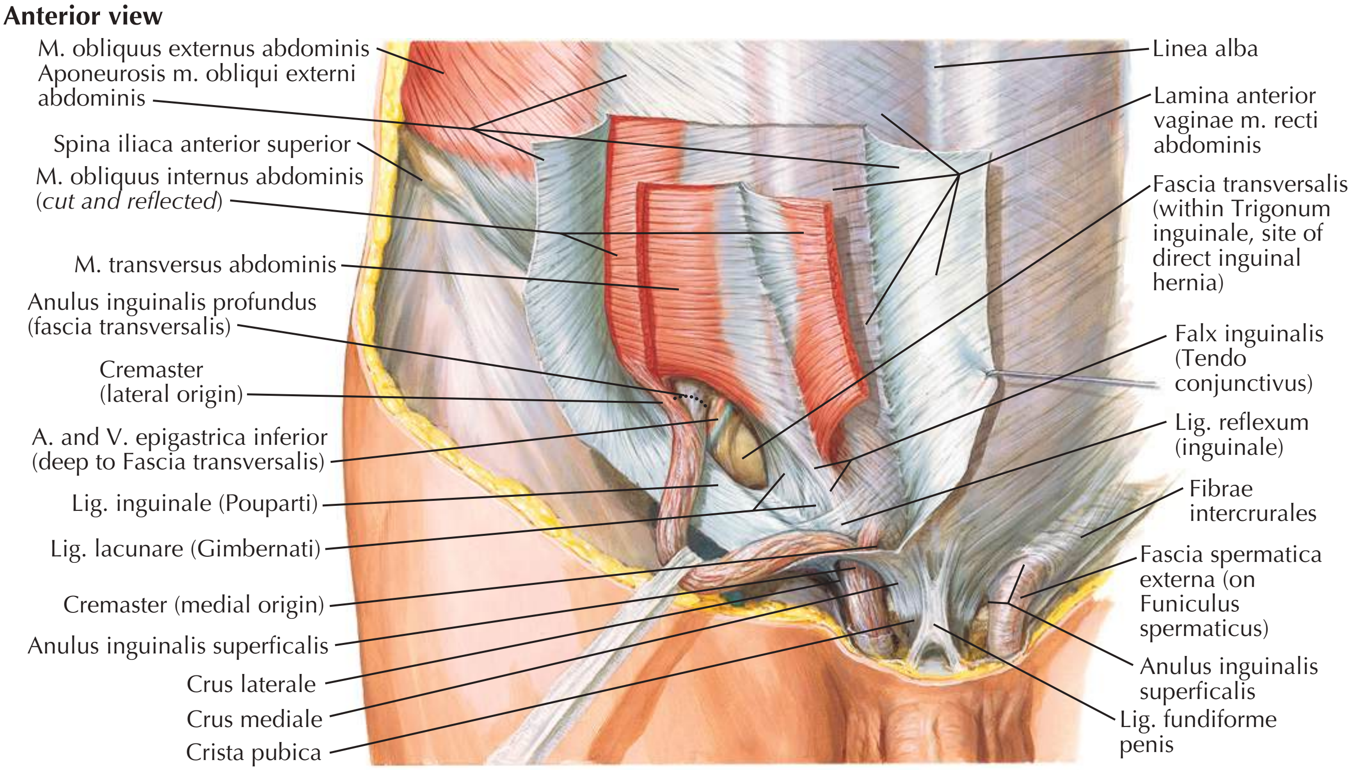
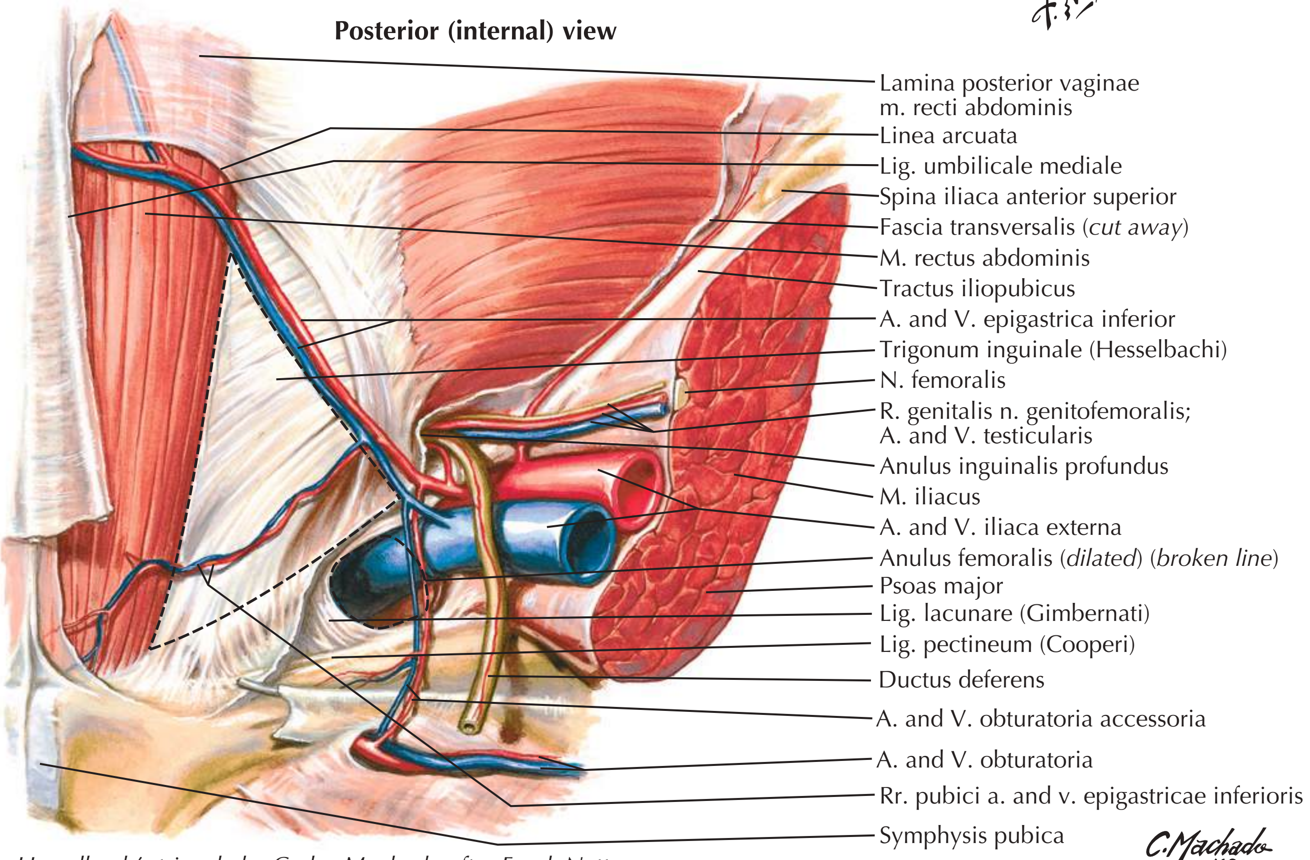
10
11
N. cutaneus medialis brachii
N. intercostobrachialis (T1, 2)
N. thoracicus longus
M. latissimus dorsi
Rr. cutanei laterales nn. intercostalium (T2–11)
Rr. cutanei anteriores nn. intercostalium (T1–11)
R. cutaneus lateralis n. subcostalis (T12)
R. cutaneus lateralis n. iliohypogastrici (L1)
R. cutaneus anterior n. subcostalis (T12)
N. cutaneus lateralis femoris (L2, 3)
R. cutaneus anterior n. iliohypogastrici (L1)
Rr. femorales n. genitofemoralis (L1, 2)
N. scrotalis anterior (from N. ilioinguinalis) (L1)
R. genitalis n. genitofemoralis (L1, 2)
M. serratus anterior
M. obliquus externus abdominis (*cut*)
Lamina posterior vaginae m. recti abdominis
Lamina anterior vaginae m. recti abdominis (*cut*)
M. rectus abdominis
M. transversus abdominis
M. obliquus internus abdominis; Aponeurosis m. obliqui interni abdominis (*cut*)
Rr. cutanei anterior and lateralis n. subcostalis (T12)
N. ilioinguinalis (L1)
Aponeurosis m. obliqui externi abdominis (*cut*)
N. ilioinguinalis (L1)
R. cutaneus anterior n. iliohypogastrici (L1)
Cremaster
Fascia spermatica externa
F. Netter M.D.


Truncus n. spinalis
R. meningeus
Gang. sensorium n. spinalis
Radix posterior
Radix anterior
Erector spinae
R. medialis
R. lateralis
R. posterior n. spinalis
R. anterior n. spinalis (N. intercostalis)
R. collateralis
M. intercostalis externus
M. intercostalis internus
M. intercostalis intimus
M. latissimus dorsi
Mm. subcostales
M. serratus anterior
Window cut in M. intercostalis intimus
R. cutaneus lateralis
R. communicans
M. intercostalis internus
Membranae intercostales internae; (anterior to Mm. intercostales externi)
M. intercostalis intimus
Nn. splanchnici thoracici major and minor
R. collateralis (rejoining N. intercostalis)
Truncus sympathicus
M. intercostalis internus
Rr. communicantes griseus and albus
M. transversus abdominis
M. intercostalis externus
M. rectus abdominis
Linea alba
Membrana intercostalis externa
M. obliquus externus abdominis
R. cutaneus anterior
F. Netter M.D.

Inguinal Region: Dissections

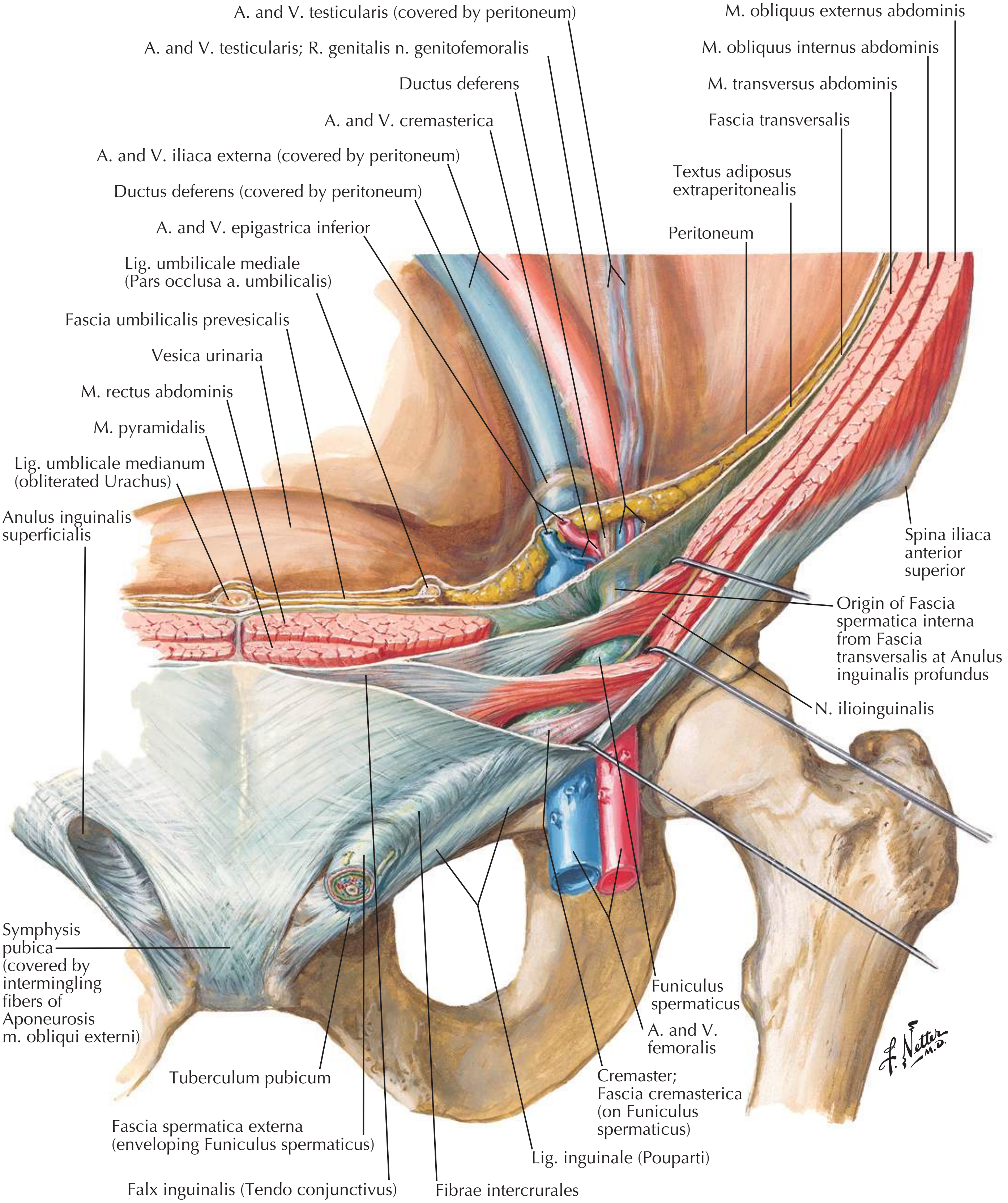
See also Plates 254, 256


Anterior view
M. obliquus externus abdominis
Aponeurosis m. obliqui externi abdominis
Spina iliaca anterior superior
M. obliquus internus abdominis (*cut and reflected*)
M. transversus abdominis
Anulus inguinalis profundus (fascia transversalis)
Cremaster (lateral origin)
A. and V. epigastrica inferior (deep to Fascia transversalis)
Lig. inguinale (Pouparti)
Lig. lacunare (Gimbernati)
Cremaster (medial origin)
Anulus inguinalis superficalis
Crus laterale
Crus mediale
Crista pubica
Linea alba
Lamina anterior vaginae m. recti abdominis
Fascia transversalis (within Trigonum inguinale, site of direct inguinal hernia)
Falx inguinalis (Tendo conjunctivus)
Lig. reflexum (inguinale)
Fibrae intercrurales
Fascia spermatica externa (on Funiculus spermaticus)
Anulus inguinalis superficalis
Lig. fundiforme penis


Posterior (internal) view
Lamina posterior vaginae m. recti abdominis
Linea arcuata
Lig. umbilicale mediale
Spina iliaca anterior superior
Fascia transversalis (*cut away*)
M. rectus abdominis
Tractus iliopubicus
A. and V. epigastrica inferior
Trigonum inguinale (Hesselbachi)
N. femoralis
R. genitalis n. genitofemoralis; A. and V. testicularis
Anulus inguinalis profundus
M. iliacus
A. and V. iliaca externa
Anulus femoralis (*dilated*) (*broken line*)
Psoas major
Lig. lacunare (Gimbernati)
Lig. pectineum (Cooperi)
Ductus deferens
A. and V. obturatoria accessoria
A. and V. obturatoria
Rr. pubici a. and v. epigastricae inferioris
Symphysis pubica

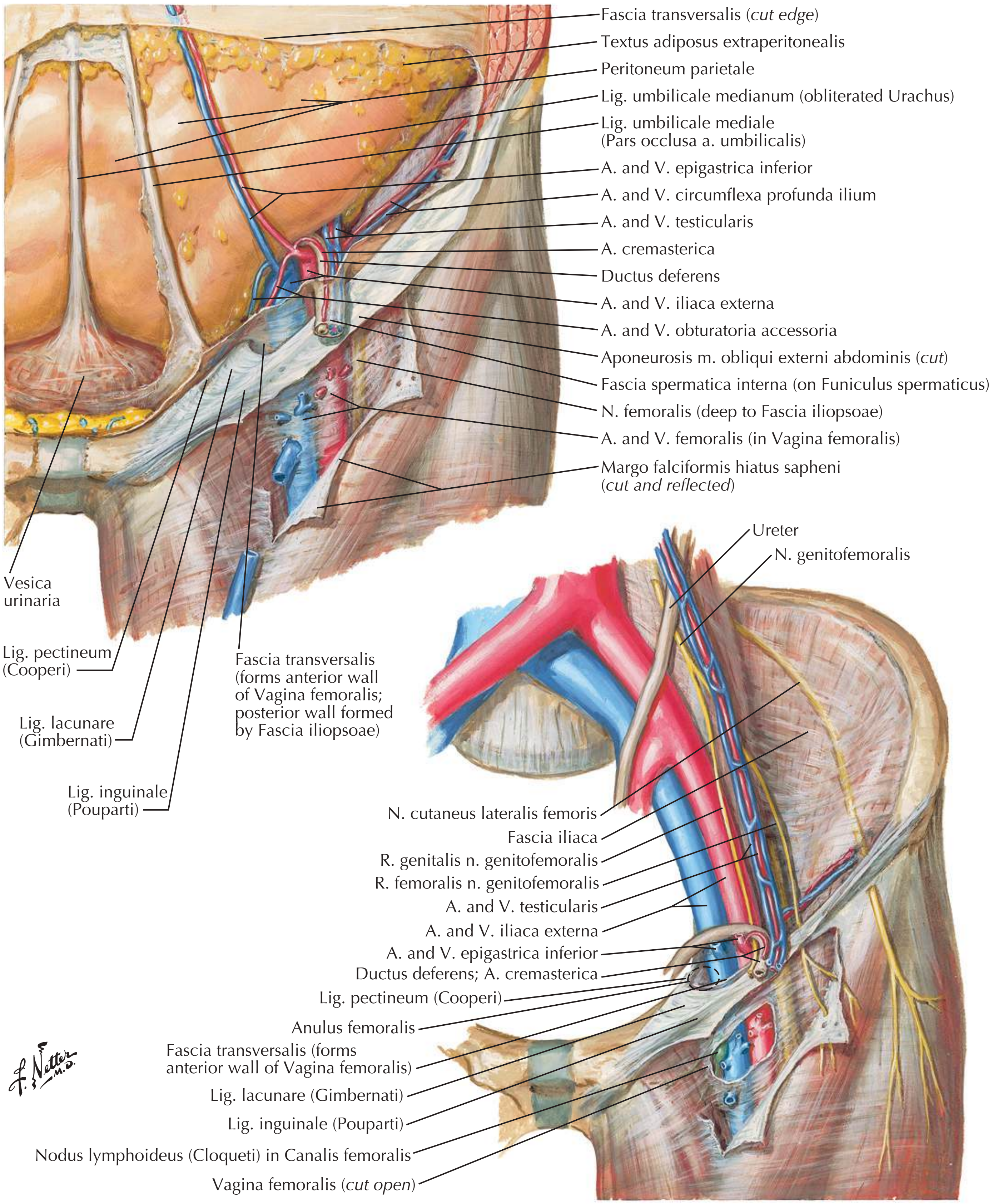
Hesselbach's triangle by Carlos Machado after Frank Netter

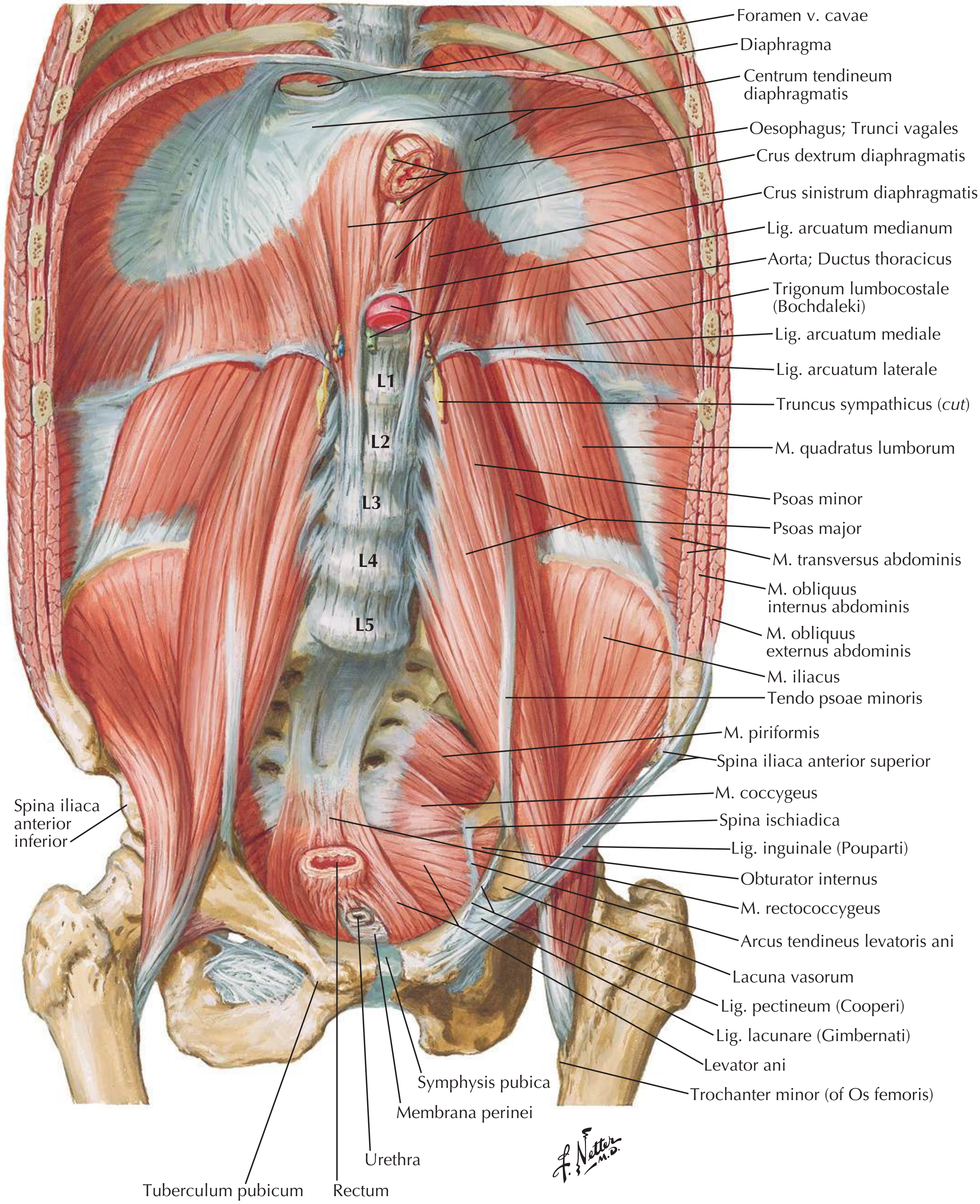
See also Plates 252, 260


A. and V. testicularis (covered by peritoneum)
A. and V. testicularis; R. genitalis n. genitofemoralis
Ductus deferens
A. and V. cremasterica
A. and V. iliaca externa (covered by peritoneum)
Ductus deferens (covered by peritoneum)
A. and V. epigastrica inferior
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Fascia umbilicalis prevesicalis
Vesica urinaria
M. rectus abdominis
M. pyramidalis
Lig. umblicale medianum (obliterated Urachus)
Anulus inguinalis superficialis
Symphysis pubica (covered by intermingling fibers of Aponeurosis m. obliqui externi)
Tuberculum pubicum
Fascia spermatica externa (enveloping Funiculus spermaticus)
Falx inguinalis (Tendo conjunctivus)
Fibrae intercrurales
Lig. inguinale (Pouparti)
Cremaster; Fascia cremasterica (on Funiculus spermaticus)
A. and V. femoralis
Funiculus spermaticus
N. ilioinguinalis
Origin of Fascia spermatica interna from Fascia transversalis at Anulus inguinalis profundus
Spina iliaca anterior superior
Peritoneum
Textus adiposus extraperitonealis
Fascia transversalis
M. transversus abdominis
M. obliquus internus abdominis
M. obliquus externus abdominis
F. Netter M.D.

Femoral Sheath and Inguinal Canal

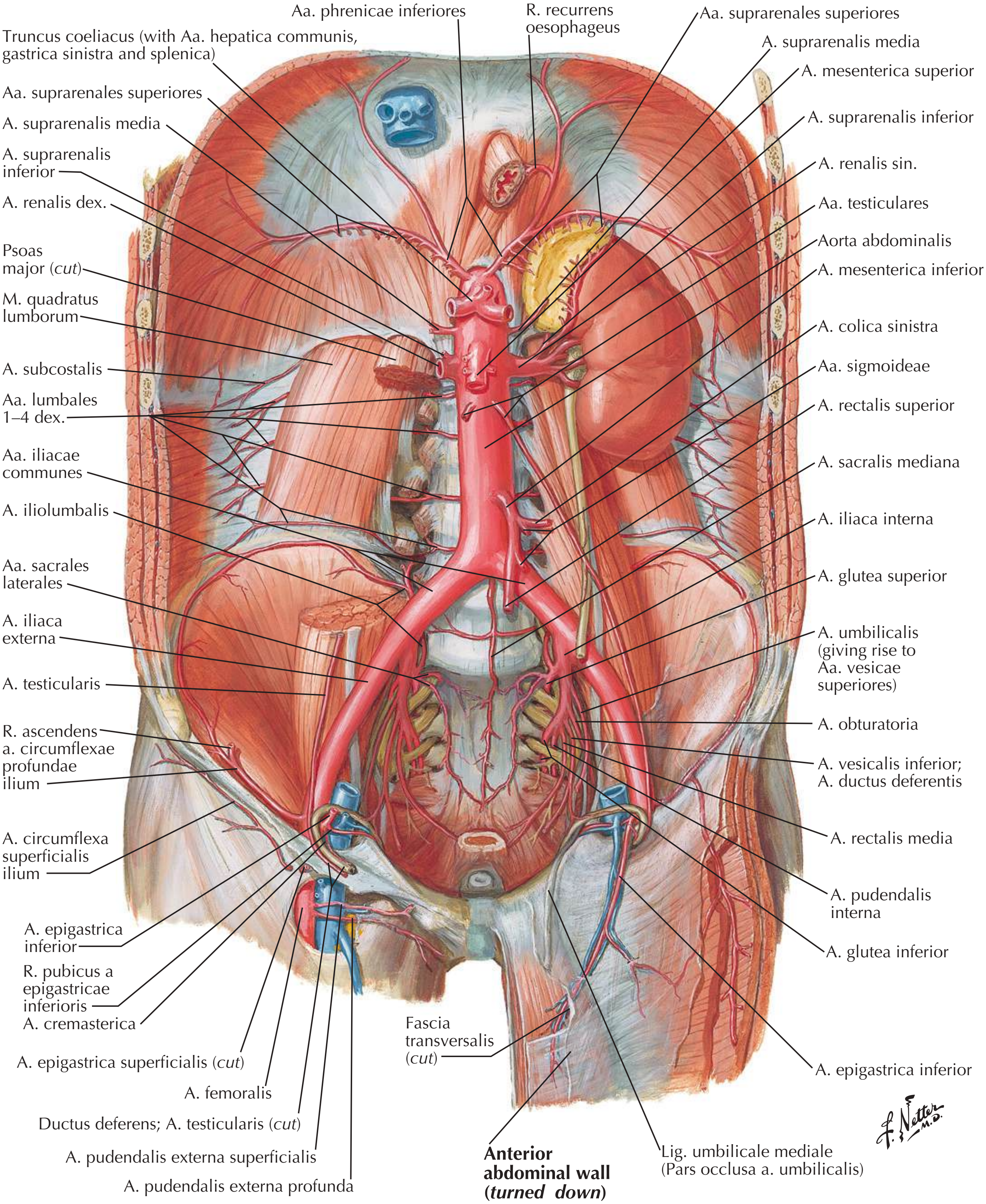
See also Plates 253, 254, 256


Fascia transversalis (*cut edge*)
Textus adiposus extraperitonealis
Peritoneum parietale
Lig. umbilicale medianum (obliterated Urachus)
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
A. and V. epigastrica inferior
A. and V. circumflexa profunda ilium
A. and V. testicularis
A. cremasterica
Ductus deferens
A. and V. iliaca externa
A. and V. obturatoria accessoria
Aponeurosis m. obliqui externi abdominis (*cut*)
Fascia spermatica interna (on Funiculus spermaticus)
N. femoralis (deep to Fascia iliopsoae)
A. and V. femoralis (in Vagina femoralis)
Margo falciformis hiatus sapheni (*cut and reflected*)
Vesica urinaria
Lig. pectineum (Cooperi)
Lig. lacunare (Gimbernati)
Lig. inguinale (Pouparti)
Fascia transversalis (forms anterior wall of Vagina femoralis; posterior wall formed by Fascia iliopsoae)
Ureter
N. genitofemoralis
N. cutaneus lateralis femoris
Fascia iliaca
R. genitalis n. genitofemoralis
R. femoralis n. genitofemoralis
A. and V. testicularis
A. and V. iliaca externa
A. and V. epigastrica inferior
Ductus deferens; A. cremasterica
Lig. pectineum (Cooperi)
Anulus femoralis
Fascia transversalis (forms anterior wall of Vagina femoralis)
Lig. lacunare (Gimbernati)
Lig. inguinale (Pouparti)
Nodus lymphoideus (Cloqueti) in Canalis femoralis
Vagina femoralis (*cut open*)


Foramen v. cavae
Diaphragma
Centrum tendineum diaphragmatis
Oesophagus; Trunci vagales
Crus dextrum diaphragmatis
Crus sinistrum diaphragmatis
Lig. arcuatum medianum
Aorta; Ductus thoracicus
Trigonum lumbocostale (Bochdaleki)
Lig. arcuatum mediale
Lig. arcuatum laterale
Truncus sympathicus (*cut*)
M. quadratus lumborum
Psoas minor
Psoas major
M. transversus abdominis
M. obliquus internus abdominis
M. obliquus externus abdominis
M. iliacus
Tendo psoae minoris
M. piriformis
Spina iliaca anterior superior
M. coccygeus
Spina ischiadica
Lig. inguinale (Pouparti)
Obturator internus
M. rectococcygeus
Arcus tendineus levatoris ani
Lacuna vasorum
Lig. pectineum (Cooperi)
Lig. lacunare (Gimbernati)
Levator ani
Trochanter minor (of Os femoris)
L1
L2
L3
L4
L5
Spina iliaca anterior inferior
Symphysis pubica
Membrana perinei
Urethra
Tuberculum pubicum
Rectum
F. Netter M.D.

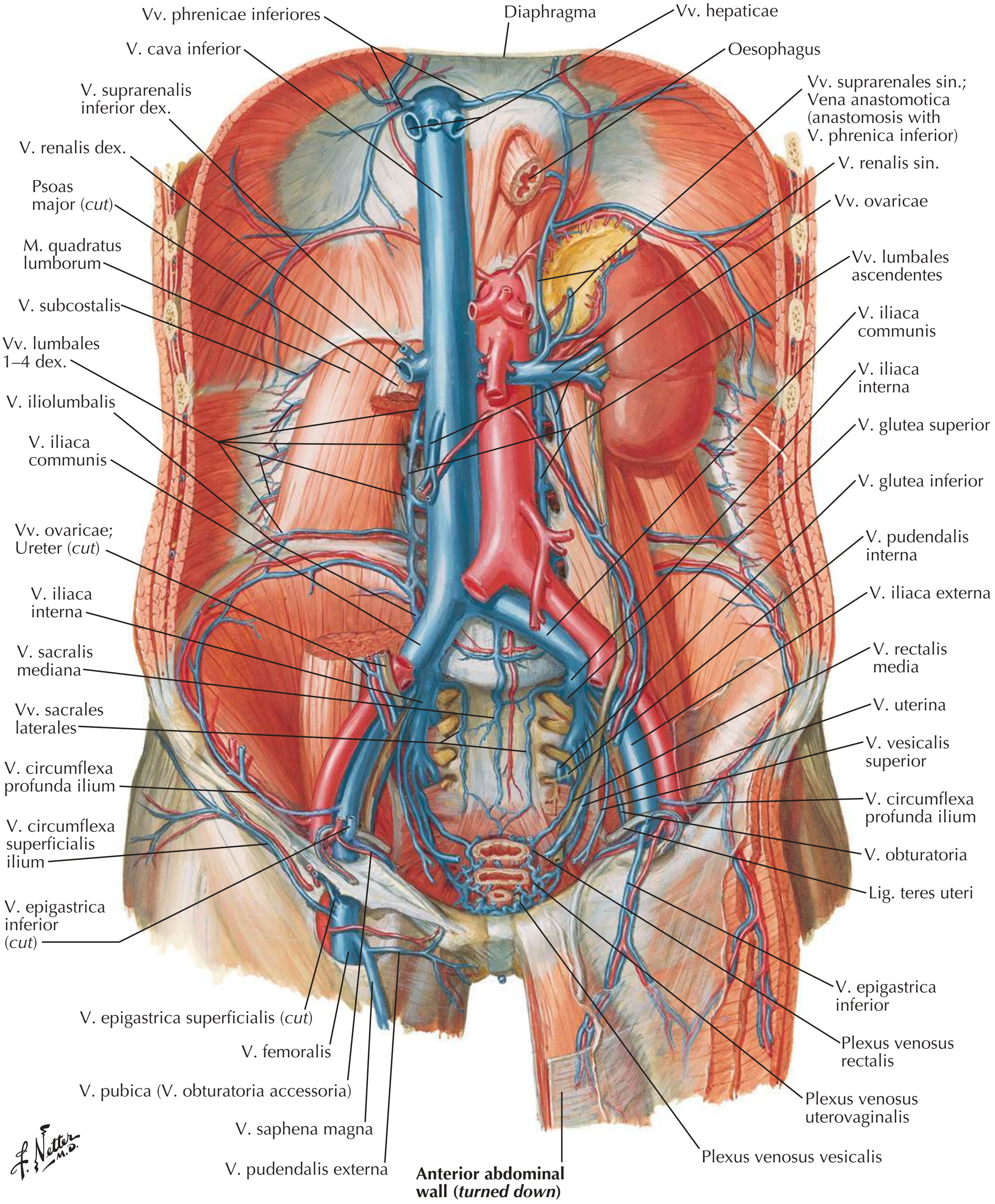
Arteries of Posterior Abdominal Wall

See also Plates 201, 383, 384

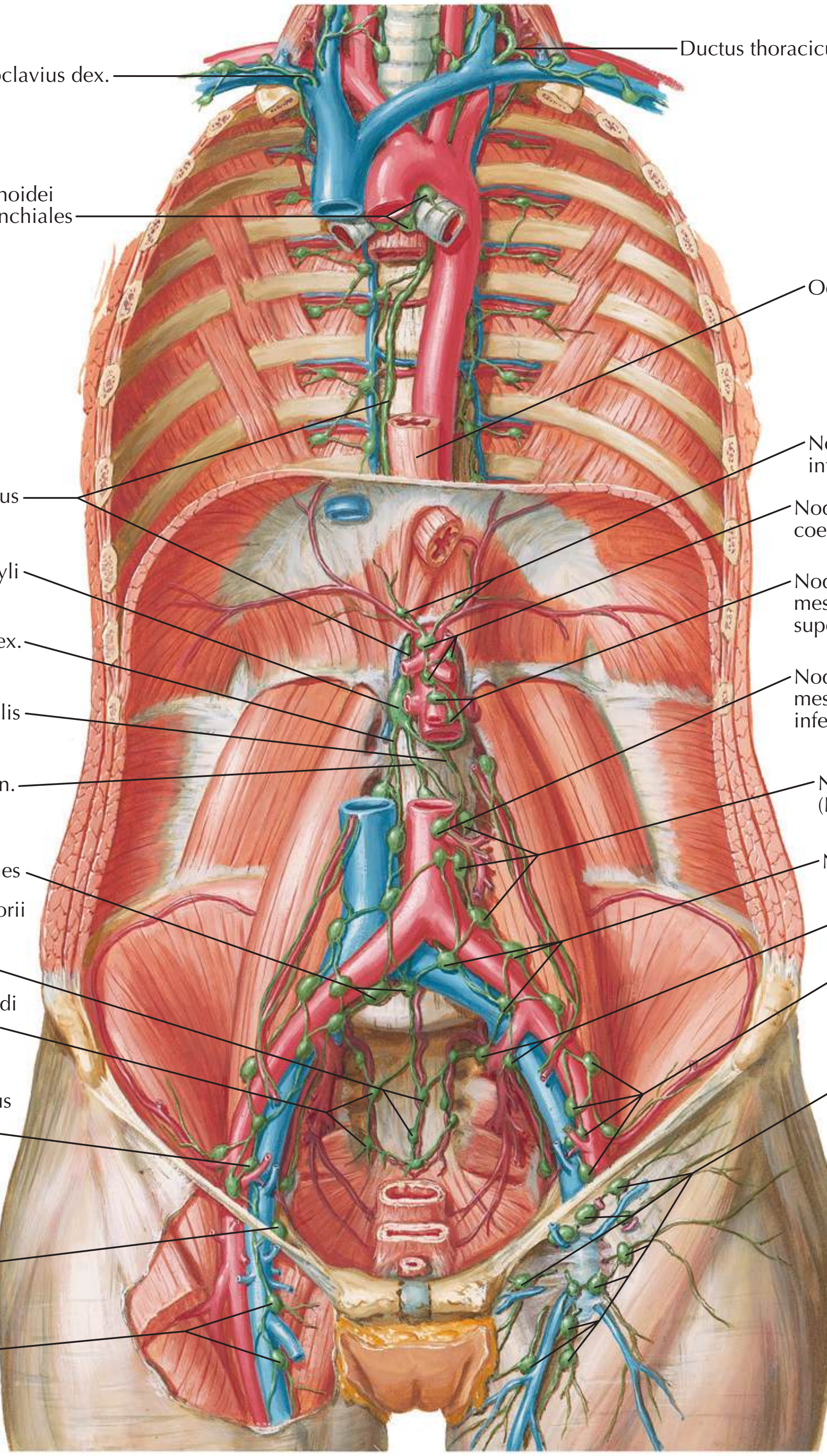

Aa. phrenicae inferiores
R. recurrens oesophageus
Aa. suprarenales superiores
Truncus coeliacus (with Aa. hepatica communis, gastrica sinistra and splenica)
A. suprarenalis media
A. mesenterica superior
Aa. suprarenales superiores
A. suprarenalis inferior
A. suprarenalis media
A. renalis sin.
A. suprarenalis inferior
A. renalis dex.
Aa. testiculares
Aorta abdominalis
Psoas major (cut)
A. mesenterica inferior
M. quadratus lumborum
A. colica sinistra
A. subcostalis
Aa. sigmoideae
Aa. lumbales 1–4 dex.
A. rectalis superior
Aa. iliacae communes
A. sacralis mediana
A. iliolumbalis
A. iliaca interna
Aa. sacrales laterales
A. glutea superior
A. iliaca externa
A. umbilicalis (giving rise to Aa. vesicae superiores)
A. testicularis
A. obturatoria
R. ascendens a. circumflexae profundae ilium
A. vesicalis inferior; A. ductus deferentis
A. rectalis media
A. circumflexa superficialis ilium
A. pudendalis interna
A. epigastrica inferior
A. glutea inferior
R. pubicus a epigastricae inferioris
A. cremasterica
Fascia transversalis (cut)
A. epigastrica inferior
A. epigastrica superficialis (cut)
A. femoralis
Ductus deferens; A. testicularis (cut)
A. pudendalis externa superficialis
Anterior abdominal wall (turned down)
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
A. pudendalis externa profunda
F. Netter M.D.

Veins of Posterior Abdominal Wall

See also Plates 382, 383

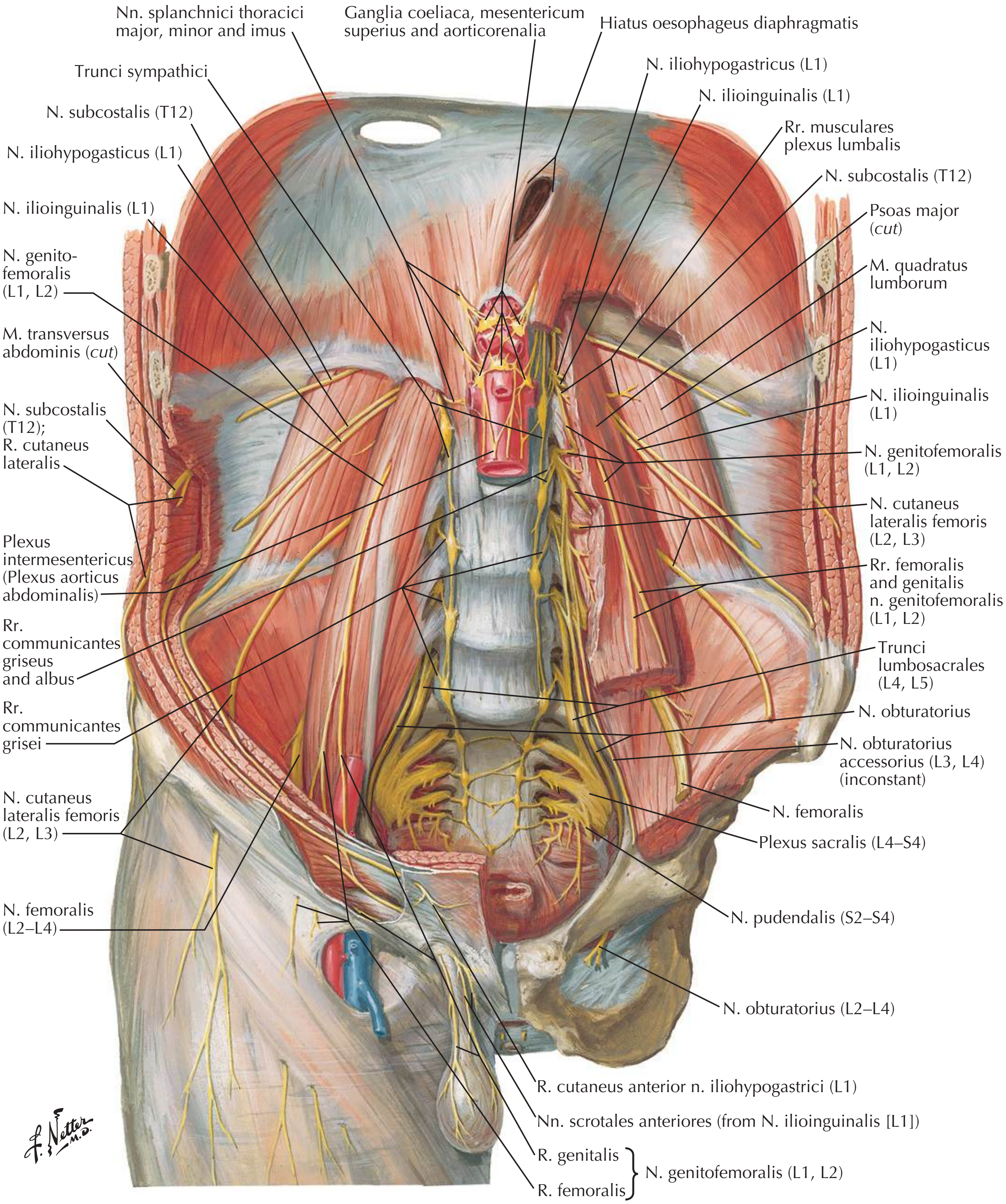

Vv. phrenicae inferiores
V. cava inferior
V. suprarenalis inferior dex.
V. renalis dex.
Psoas major (*cut*)
M. quadratus lumborum
V. subcostalis
Vv. lumbales 1–4 dex.
V. iliolumbalis
V. iliaca communis
Vv. ovaricae; Ureter (*cut*)
V. iliaca interna
V. sacralis mediana
Vv. sacrales laterales
V. circumflexa profunda ilium
V. circumflexa superficialis ilium
V. epigastrica inferior (*cut*)
V. epigastrica superficialis (*cut*)
V. femoralis
V. pubica (V. obturatoria accessoria)
V. saphena magna
V. pudendalis externa
Anterior abdominal wall (*turned down*)
Diaphragma
Vv. hepaticae
Oesophagus
Vv. suprarenales sin.; Vena anastomotica (anastomosis with V. phrenica inferior)
V. renalis sin.
Vv. ovaricae
Vv. lumbales ascendentes
V. iliaca communis
V. iliaca interna
V. glutea superior
V. glutea inferior
V. pudendalis interna
V. iliaca externa
V. rectalis media
V. uterina
V. vesicalis superior
V. circumflexa profunda ilium
V. obturatoria
Lig. teres uteri
V. epigastrica inferior
Plexus venosus rectalis
Plexus venosus uterovaginalis
Plexus venosus vesicalis
F. Netter M.D.

See also Plates 319, 388

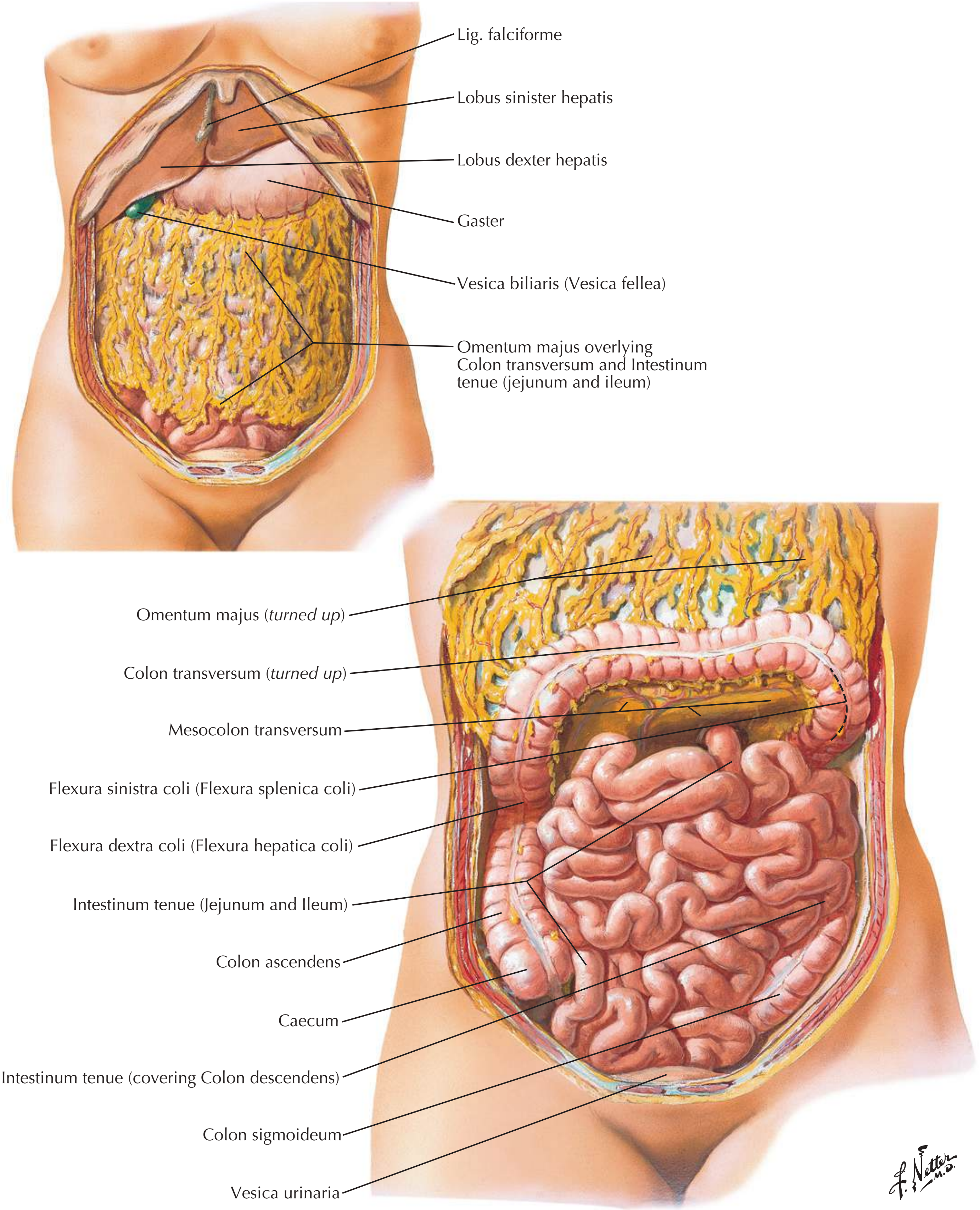

Truncus subclavius dex.
Ductus thoracicus
Nodi lymphoidei tracheobronchiales
Oesophagus (*cut*)
Ductus thoracicus
Nodi phrenici inferiores
Nodi coeliaci
Cisterna chyli
Nodi mesenterici superiores
Nodi lymphoidei viscerales abdominis
Truncus lumbalis dex.
Nodi mesenterici inferiores
Truncus intestinalis
Truncus lumbalis sin.
Nodi lumbales sin. (Nodi aortici laterales)
Nodi iliaci communes
Nodi iliaci communes
Nodi promontorii (Nodi sacrales mediani)
Nodi iliaci interni
Nodi iliaci externi
Nodi sacrales (Nodi sacrales laterales)
Nodus epigastricus inferior
Nodi inguinales superficiales (superomediales, superolaterales and inferiores)
Nodus inguinalis profundus proximalis (Node of Cloquet or Rosenmüller)
Nodi inguinales profundi

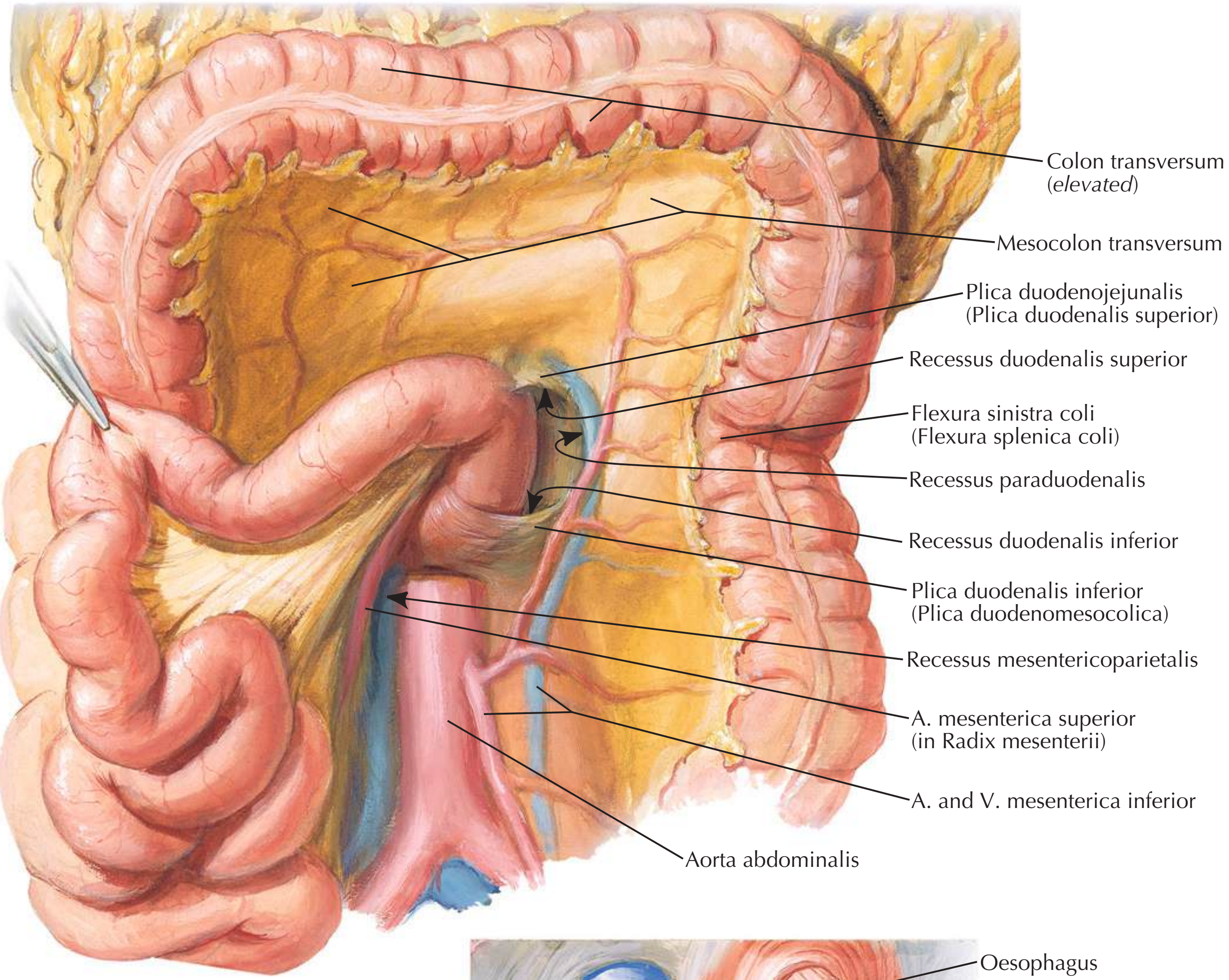
Nerves of Posterior Abdominal Wall

See also Plates 201, 392

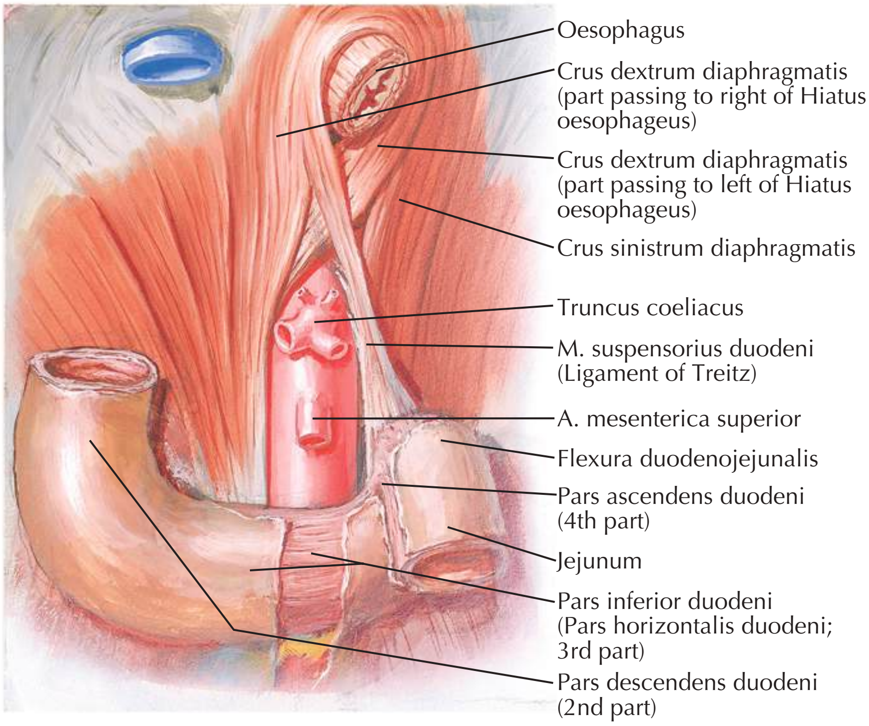

Nn. splanchnici thoracici major, minor and imus
Ganglia coeliaca, mesentericum superius and aorticorenalia
Hiatus oesophageus diaphragmatis
Trunci sympathici
N. subcostalis (T12)
N. iliohypogasticus (L1)
N. ilioinguinalis (L1)
N. genito-femoralis (L1, L2)
M. transversus abdominis (*cut*)
N. subcostalis (T12); R. cutaneus lateralis
Plexus intermesentericus (Plexus aorticus abdominalis)
Rr. communicantes griseus and albus
Rr. communicantes grisei
N. cutaneus lateralis femoris (L2, L3)
N. femoralis (L2–L4)
N. iliohypogastricus (L1)
N. ilioinguinalis (L1)
Rr. musculares plexus lumbalis
N. subcostalis (T12)
Psoas major (*cut*)
M. quadratus lumborum
N. iliohypogasticus (L1)
N. ilioinguinalis (L1)
N. genitofemoralis (L1, L2)
N. cutaneus lateralis femoris (L2, L3)
Rr. femoralis and genitalis n. genitofemoralis (L1, L2)
Trunci lumbosacrales (L4, L5)
N. obturatorius
N. obturatorius accessorius (L3, L4) (inconstant)
N. femoralis
Plexus sacralis (L4–S4)
N. pudendalis (S2–S4)
N. obturatorius (L2–L4)
R. cutaneus anterior n. iliohypogastrici (L1)
Nn. scrotales anteriores (from N. ilioinguinalis [L1])
R. genitalis
R. femoralis
N. genitofemoralis (L1, L2)
F. Netter M.D.

Greater Omentum and Abdominal Viscera


Lig. falciforme
Lobus sinister hepatis
Lobus dexter hepatis
Gaster
Vesica biliaris (Vesica fellea)
Omentum majus overlying Colon transversum and Intestinum tenue (jejunum and ileum)
Omentum majus (*turned up*)
Colon transversum (*turned up*)
Mesocolon transversum
Flexura sinistra coli (Flexura splenica coli)
Flexura dextra coli (Flexura hepatica coli)
Intestinum tenue (Jejunum and Ileum)
Colon ascendens
Caecum
Intestinum tenue (covering Colon descendens)
Colon sigmoideum
Vesica urinaria
F. Netter M.D.


Colon transversum
(*elevated*)
Mesocolon transversum
Plica duodenojejunalis
(Plica duodenalis superior)
Recessus duodenalis superior
Flexura sinistra coli
(Flexura splenica coli)
Recessus paraduodenalis
Recessus duodenalis inferior
Plica duodenalis inferior
(Plica duodenomesocolica)
Recessus mesentericoparietalis
A. mesenterica superior
(in Radix mesenterii)
A. and V. mesenterica inferior
Aorta abdominalis

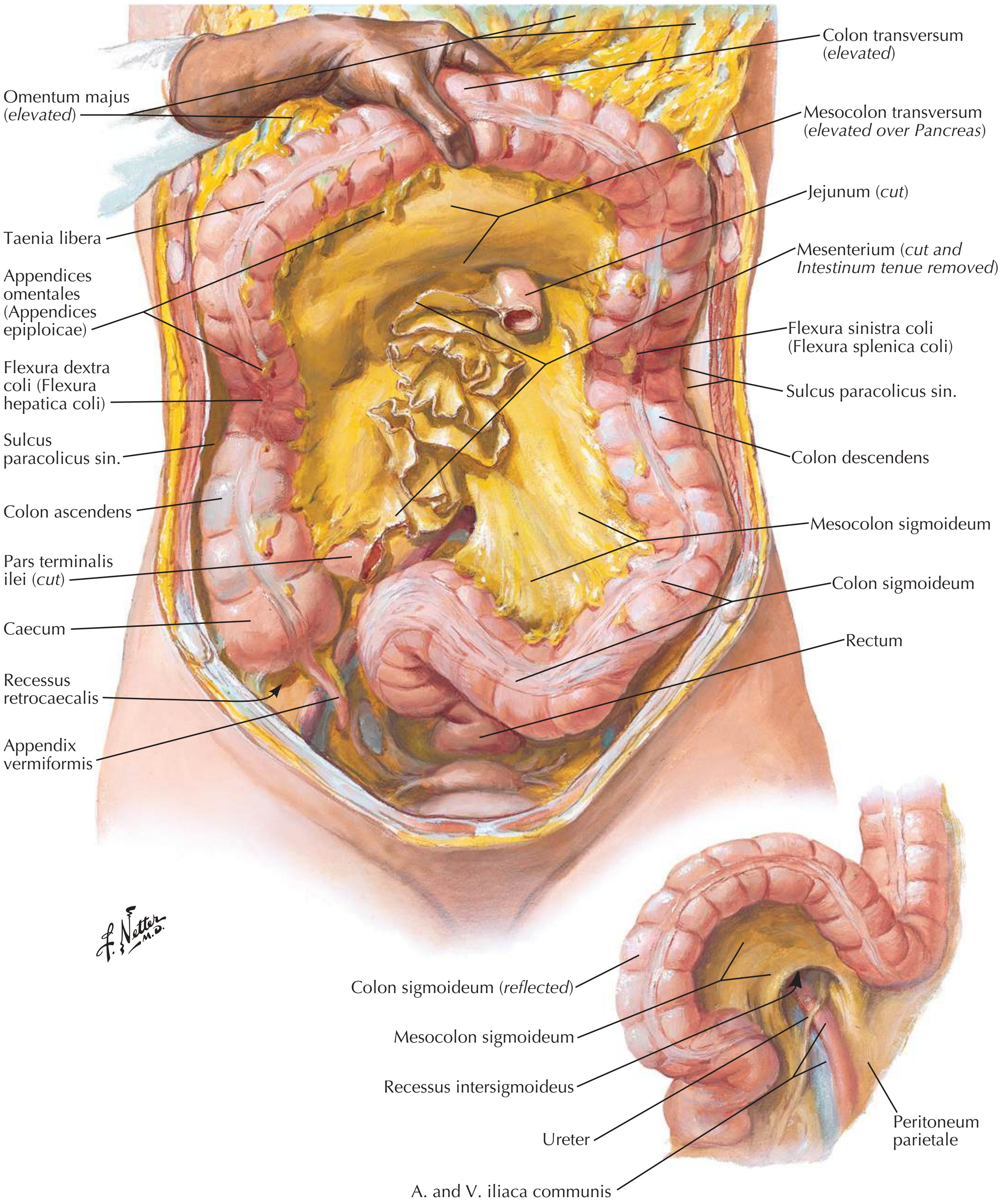
Exposure of M. suspensorius duodeni (Ligament of Treitz)


Oesophagus
Crus dextrum diaphragmatis
(part passing to right of Hiatus oesophageus)
Crus dextrum diaphragmatis
(part passing to left of Hiatus oesophageus)
Crus sinistrum diaphragmatis
Truncus coeliacus
M. suspensorius duodeni
(Ligament of Treitz)
A. mesenterica superior
Flexura duodenojejunalis
Pars ascendens duodeni
(4th part)
Jejunum
Pars inferior duodeni
(Pars horizontalis duodeni;
3rd part)
Pars descendens duodeni
(2nd part)

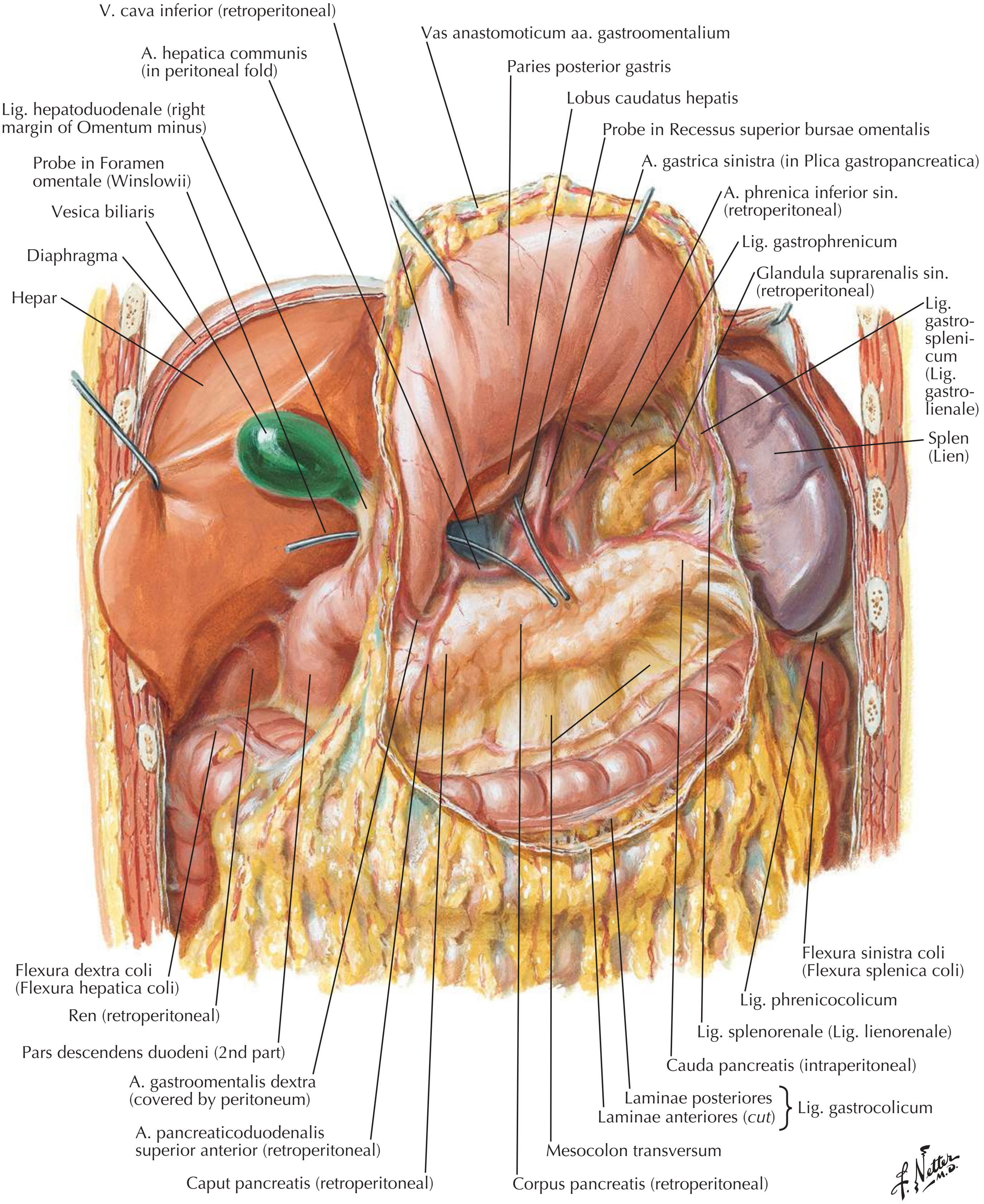
F. Netter M.D.

Mesenteric Relations of Intestines (continued)

See also Plate 295

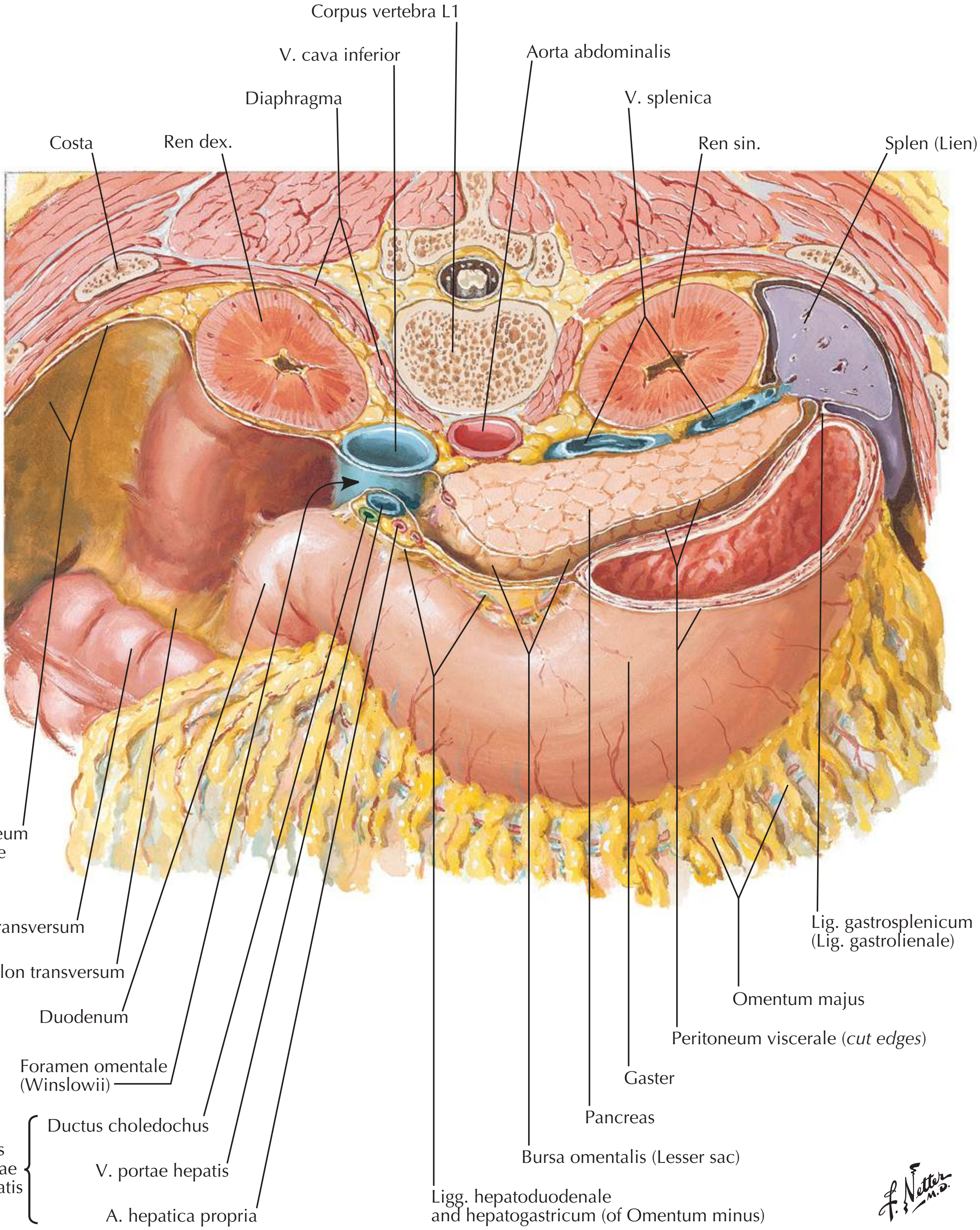

Omentum majus (*elevated*)
Taenia libera
Appendices omentales (Appendices epiploicae)
Flexura dextra coli (Flexura hepatica coli)
Sulcus paracolicus sin.
Colon ascendens
Pars terminalis ilei (*cut*)
Caecum
Recessus retrocaecalis
Appendix vermiformis
Colon transversum (*elevated*)
Mesocolon transversum (*elevated over Pancreas*)
Jejunum (*cut*)
Mesenterium (*cut and Intestinum tenue removed*)
Flexura sinistra coli (Flexura splenica coli)
Sulcus paracolicus sin.
Colon descendens
Mesocolon sigmoideum
Colon sigmoideum
Rectum
Colon sigmoideum (*reflected*)
Mesocolon sigmoideum
Recessus intersigmoideus
Ureter
A. and V. iliaca communis
Peritoneum parietale

See also Plates 288, 291


V. cava inferior (retroperitoneal)
A. hepatica communis (in peritoneal fold)
Lig. hepatoduodenale (right margin of Omentum minus)
Probe in Foramen omentale (Winslowii)
Vesica biliaris
Diaphragma
Hepar
Vas anastomoticum aa. gastroomentalium
Paries posterior gastris
Lobus caudatus hepatis
Probe in Recessus superior bursae omentalis
A. gastrica sinistra (in Plica gastropancreatica)
A. phrenica inferior sin. (retroperitoneal)
Lig. gastrophrenicum
Glandula suprarenalis sin. (retroperitoneal)
Lig. gastrosplenicum (Lig. gastrolienale)
Splen (Lien)
Flexura dextra coli (Flexura hepatica coli)
Ren (retroperitoneal)
Pars descendens duodeni (2nd part)
A. gastroomentalis dextra (covered by peritoneum)
A. pancreaticoduodenalis superior anterior (retroperitoneal)
Caput pancreatis (retroperitoneal)
Flexura sinistra coli (Flexura splenica coli)
Lig. phrenicocolicum
Lig. splenorenale (Lig. lienorenale)
Cauda pancreatis (intraperitoneal)
Laminae posteriores
Laminae anteriores (*cut*)
} Lig. gastrocolicum
Mesocolon transversum
Corpus pancreatis (retroperitoneal)
F. Netter M.D.

Omental Bursa: Cross Section

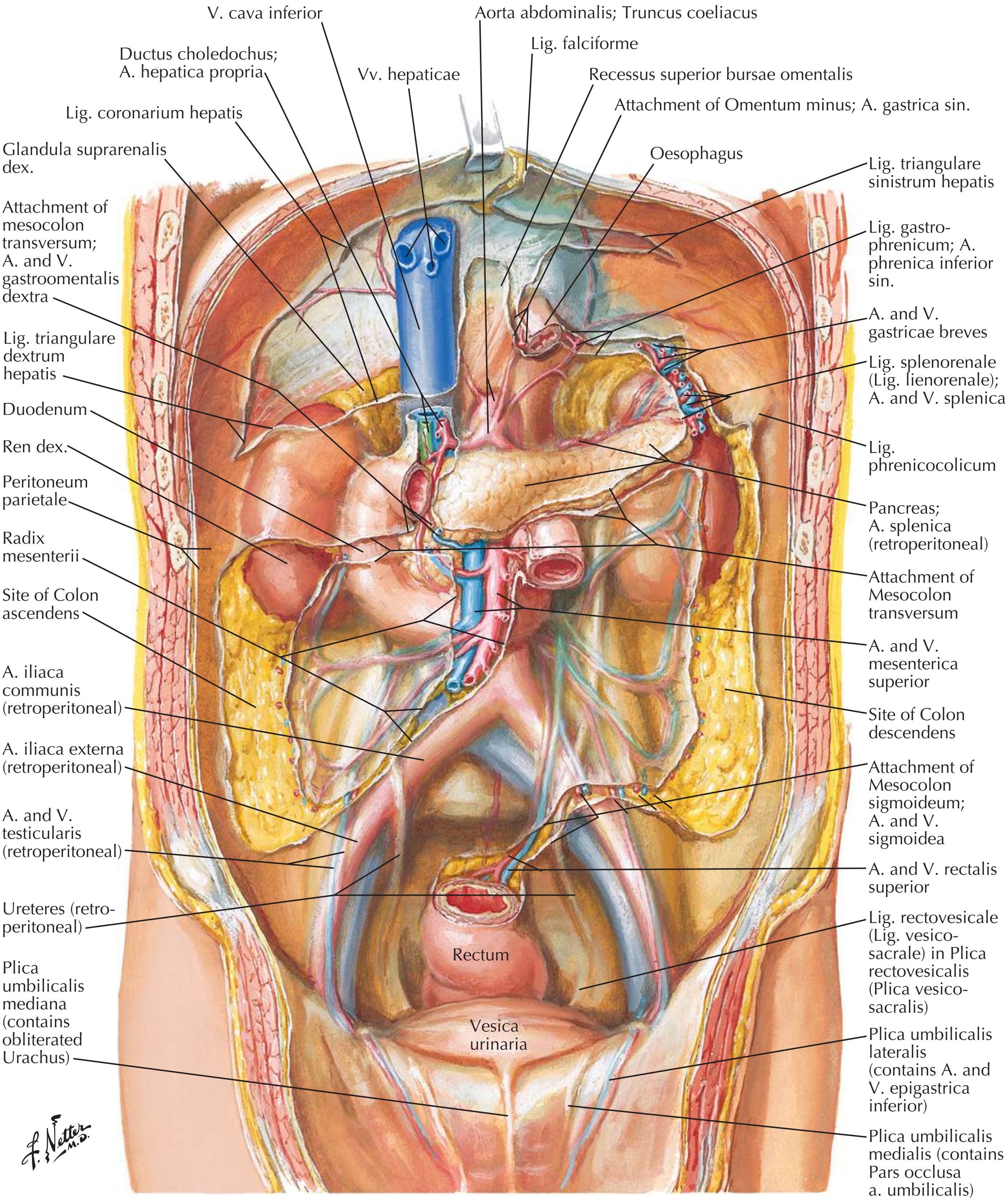
See also Plate 276

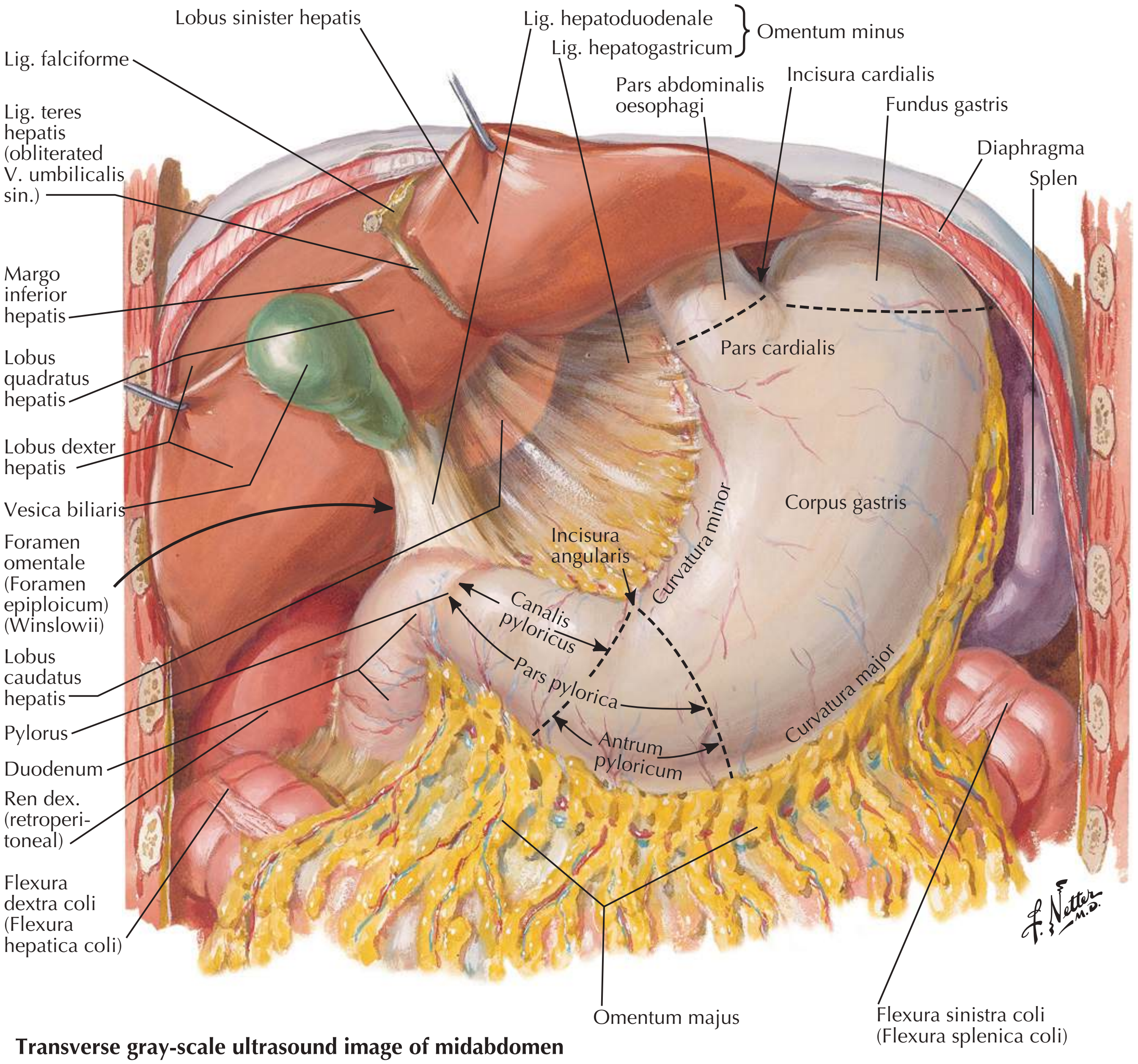


Corpus vertebra L1
V. cava inferior
Aorta abdominalis
Diaphragma
V. splenica
Costa
Ren dex.
Ren sin.
Splen (Lien)
Peritoneum parietale
Colon transversum
Mesocolon transversum
Duodenum
Foramen omentale (Winslowii)
Trias portae hepatis
Ductus choledochus
V. portae hepatis
A. hepatica propria
Lig. gastrosplenicum (Lig. gastrolienale)
Omentum majus
Peritoneum viscerale (*cut edges*)
Gaster
Pancreas
Bursa omentalis (Lesser sac)
Ligg. hepatoduodenale and hepatogastricum (of Omentum minus)

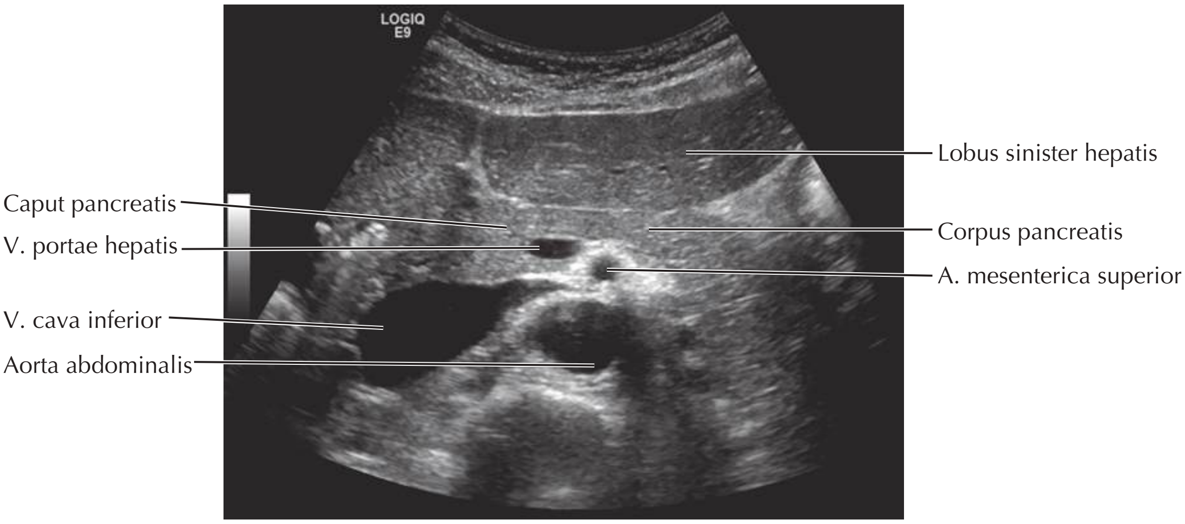
Peritoneum of Posterior Abdominal Wall

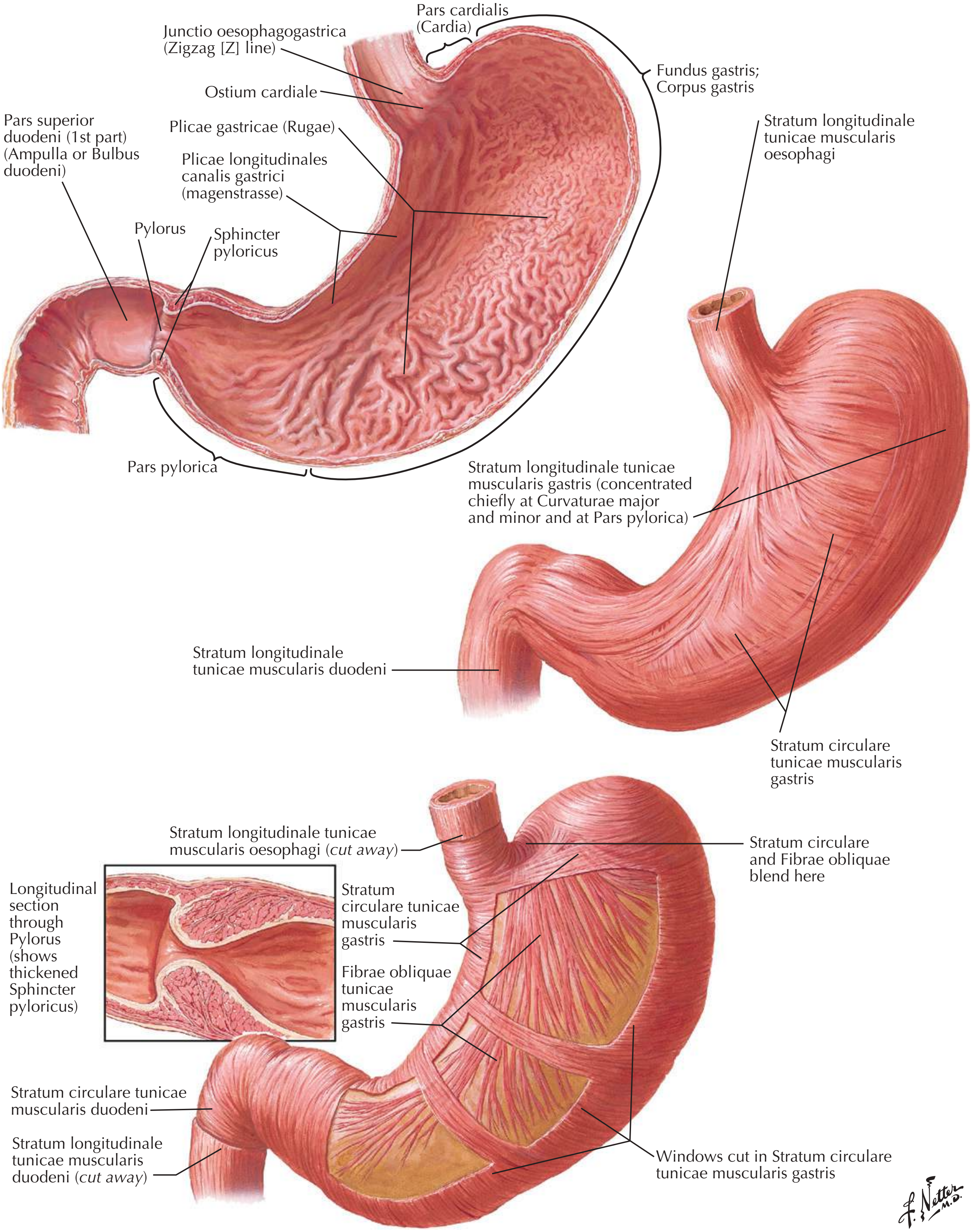
See also Plate 278


V. cava inferior
Ductus choledochus; A. hepatica propria
Vv. hepaticae
Aorta abdominalis; Truncus coeliacus
Lig. falciforme
Recessus superior bursae omentalis
Attachment of Omentum minus; A. gastrica sin.
Lig. coronarium hepatis
Glandula suprarenalis dex.
Oesophagus
Attachment of mesocolon transversum; A. and V. gastroomentalis dextra
Lig. triangulare dextrum hepatis
Duodenum
Ren dex.
Peritoneum parietale
Radix mesenterii
Site of Colon ascendens
A. iliaca communis (retroperitoneal)
A. iliaca externa (retroperitoneal)
A. and V. testicularis (retroperitoneal)
Ureteres (retroperitoneal)
Plica umbilicalis mediana (contains obliterated Urachus)
Lig. triangulare sinistrum hepatis
Lig. gastrophrenicum; A. phrenica inferior sin.
A. and V. gastricae breves
Lig. splenorenale (Lig. lienorenale); A. and V. splenica
Lig. phrenicocolicum
Pancreas; A. splenica (retroperitoneal)
Attachment of Mesocolon transversum
A. and V. mesenterica superior
Site of Colon descendens
Attachment of Mesocolon sigmoideum; A. and V. sigmoidea
A. and V. rectalis superior
Lig. rectovesicale (Lig. vesicosacrale) in Plica rectovesicalis (Plica vesicosacralis)
Plica umbilicalis lateralis (contains A. and V. epigastrica inferior)
Plica umbilicalis medialis (contains Pars occlusa a. umbilicalis)
Rectum
Vesica urinaria
F. Netter M.D.


Lobus sinister hepatis
Lig. hepatoduodenale
Lig. hepatogastricum
Omentum minus
Lig. falciforme
Pars abdominalis oesophagi
Incisura cardialis
Fundus gastris
Lig. teres hepatis (obliterated V. umbilicalis sin.)
Diaphragma
Splen
Margo inferior hepatis
Pars cardialis
Lobus quadratus hepatis
Lobus dexter hepatis
Vesica biliaris
Corpus gastris
Curvatura minor
Foramen omentale (Foramen epiploicum) (Winslowii)
Incisura angularis
Canalis pyloricus
Lobus caudatus hepatis
Pars pylorica
Curvatura major
Pylorus
Antrum pyloricum
Duodenum
Ren dex. (retroperitoneal)
Flexura dextra coli (Flexura hepatica coli)
Omentum majus
Flexura sinistra coli (Flexura splenica coli)

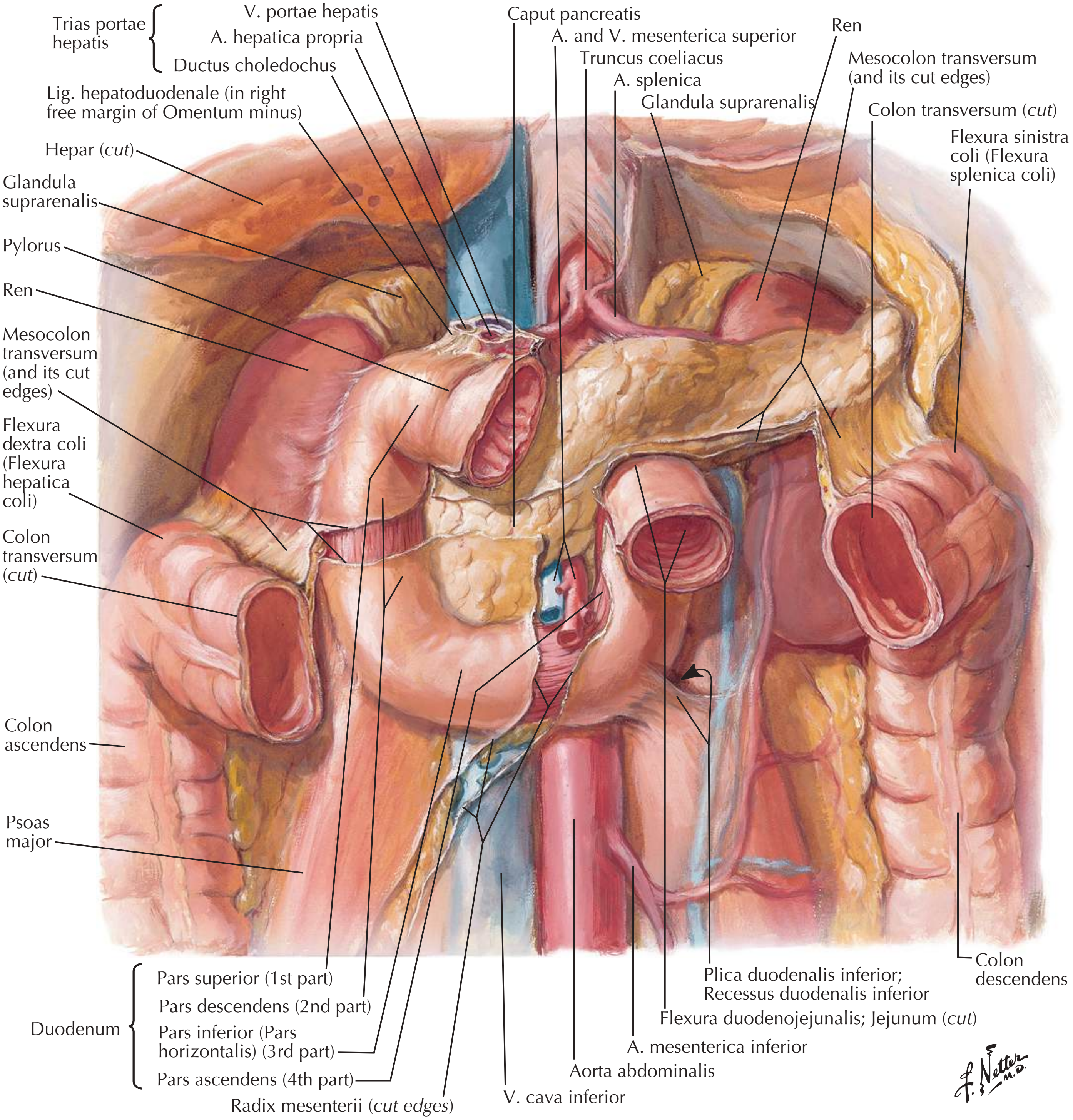
Transverse gray-scale ultrasound image of midabdomen


LOGIQ E9
Lobus sinister hepatis
Caput pancreatis
Corpus pancreatis
V. portae hepatis
A. mesenterica superior
V. cava inferior
Aorta abdominalis

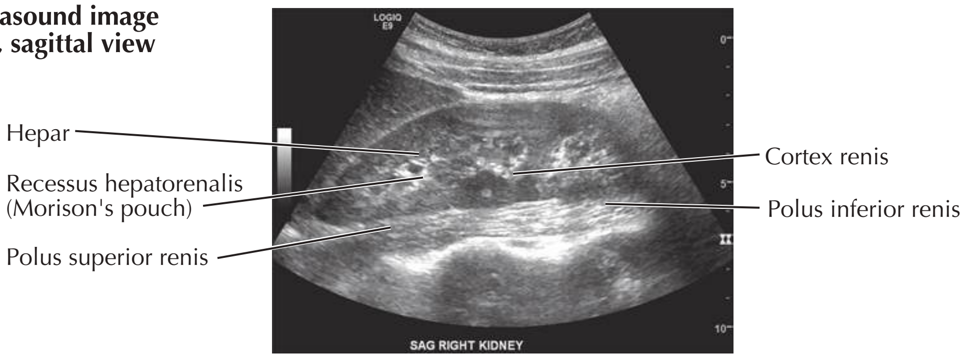

Pars cardialis (Cardia)
Junctio oesophagogastrica (Zigzag [Z] line)
Ostium cardiale
Fundus gastris; Corpus gastris
Pars superior duodeni (1st part) (Ampulla or Bulbus duodeni)
Plicae gastricae (Rugae)
Plicae longitudinales canalis gastrici (magenstrasse)
Pylorus
Sphincter pyloricus
Pars pylorica
Stratum longitudinale tunicae muscularis oesophagi
Stratum longitudinale tunicae muscularis gastris (concentrated chiefly at Curvaturae major and minor and at Pars pylorica)
Stratum longitudinale tunicae muscularis duodeni
Stratum circulare tunicae muscularis gastris
Stratum longitudinale tunicae muscularis oesophagi (*cut away*)
Stratum circulare and Fibrae obliquae blend here
Longitudinal section through Pylorus (shows thickened Sphincter pyloricus)
Stratum circulare tunicae muscularis gastris
Fibrae obliquae tunicae muscularis gastris
Stratum circulare tunicae muscularis duodeni
Stratum longitudinale tunicae muscularis duodeni (*cut away*)
Windows cut in Stratum circulare tunicae muscularis gastris
F. Netter M.D.

Duodenum in Situ

See also Plate 275

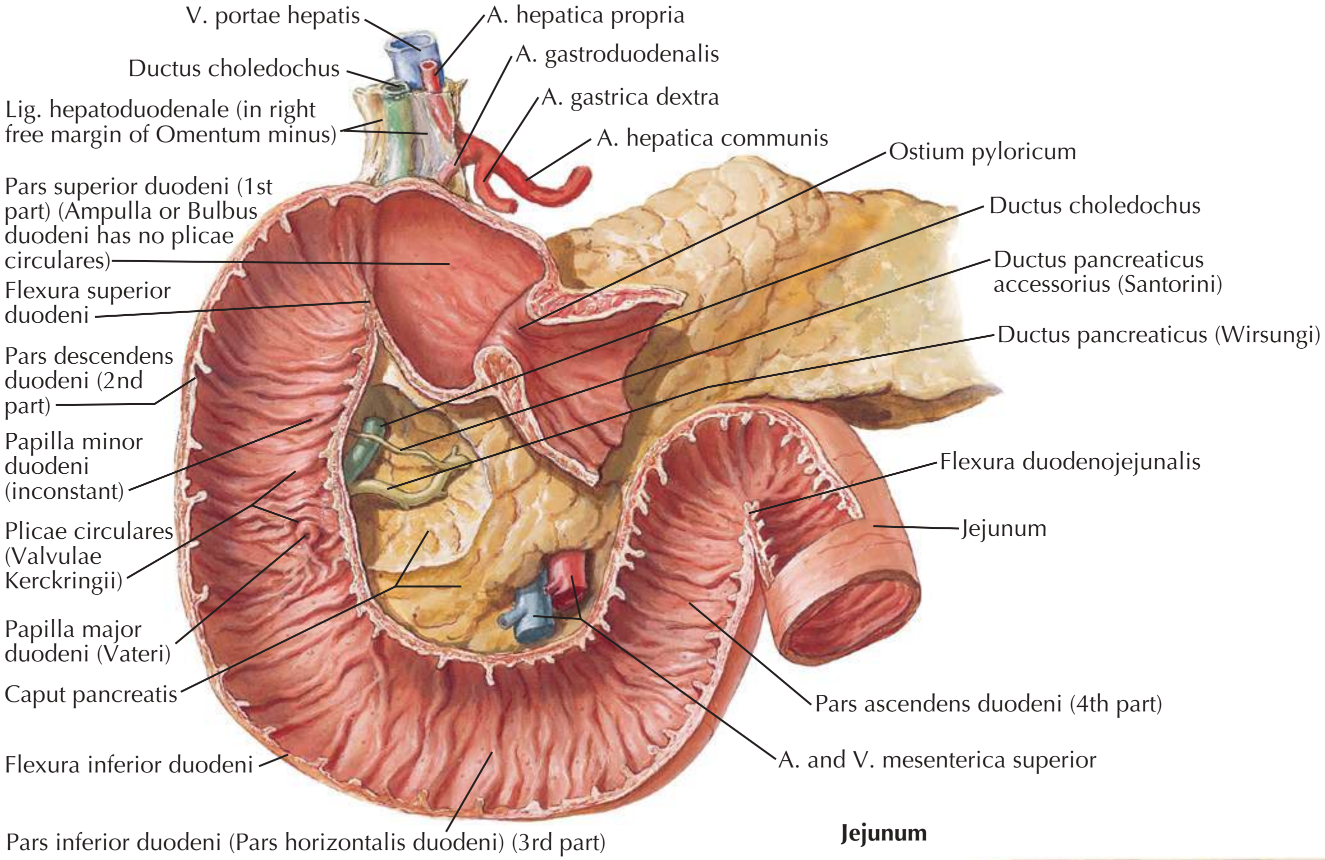

Trias portae hepatis
V. portae hepatis
A. hepatica propria
Ductus choledochus
Lig. hepatoduodenale (in right free margin of Omentum minus)
Hepar (*cut*)
Glandula suprarenalis
Pylorus
Ren
Mesocolon transversum (and its cut edges)
Flexura dextra coli (Flexura hepatica coli)
Colon transversum (*cut*)
Colon ascendens
Psoas major
Caput pancreatis
A. and V. mesenterica superior
Truncus coeliacus
A. splenica
Glandula suprarenalis
Ren
Mesocolon transversum (and its cut edges)
Colon transversum (*cut*)
Flexura sinistra coli (Flexura splenica coli)
Duodenum
Pars superior (1st part)
Pars descendens (2nd part)
Pars inferior (Pars horizontalis) (3rd part)
Pars ascendens (4th part)
Radix mesenterii (*cut edges*)
V. cava inferior
Aorta abdominalis
A. mesenterica inferior
Flexura duodenojejunalis; Jejunum (*cut*)
Plica duodenalis inferior; Recessus duodenalis inferior
Colon descendens

Gray-scale ultrasound image of right kidney, sagittal view


LOGIQ E9
SAG RIGHT KIDNEY
Hepar
Recessus hepatorenalis (Morison's pouch)
Polus superior renis
Cortex renis
Polus inferior renis

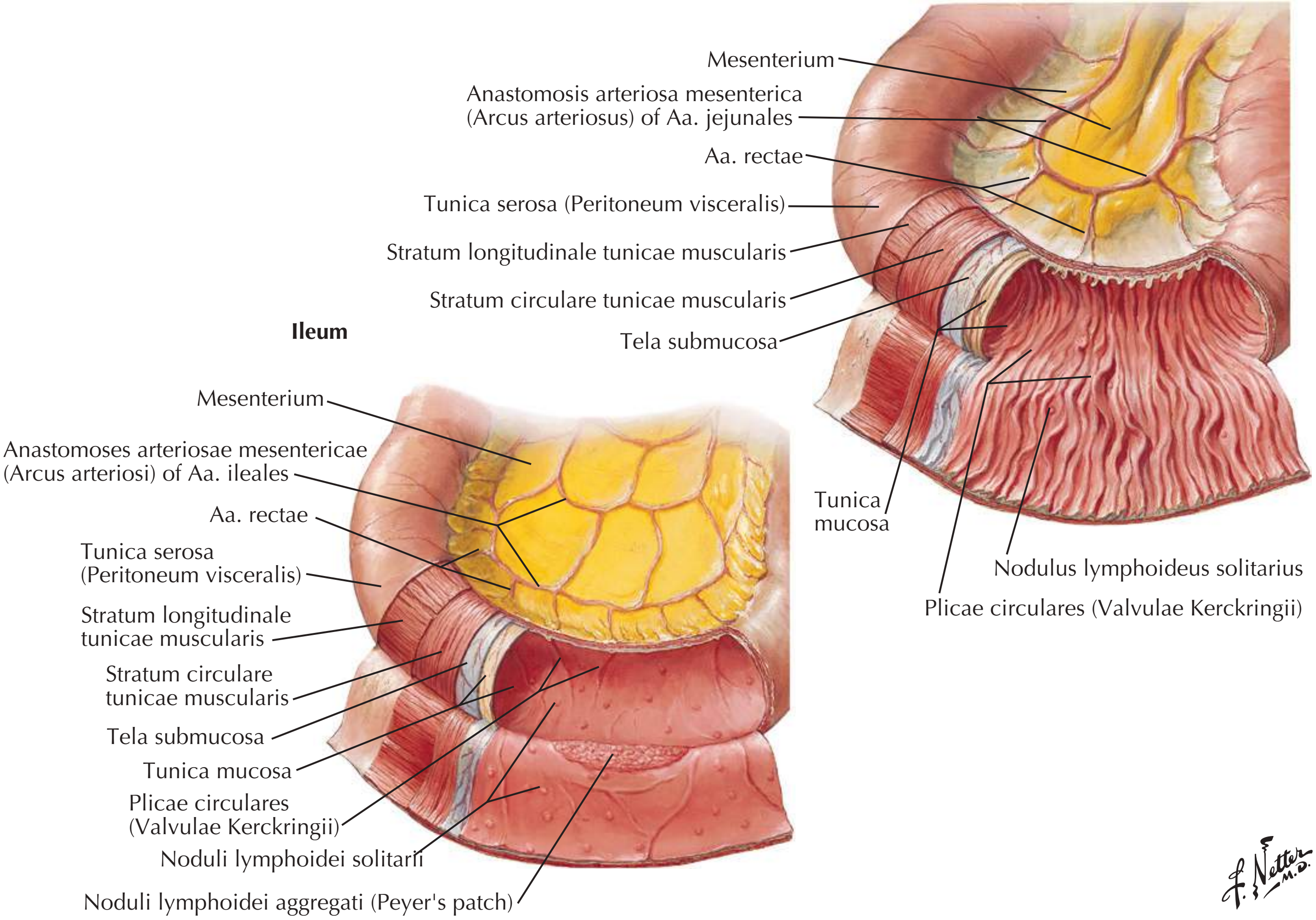
Mucosa and Musculature of Small Intestine

See also Plate 277


V. portae hepatis
A. hepatica propria
A. gastroduodenalis
Ductus choledochus
A. gastrica dextra
Lig. hepatoduodenale (in right free margin of Omentum minus)
A. hepatica communis
Ostium pyloricum
Pars superior duodeni (1st part) (Ampulla or Bulbus duodeni has no plicae circulares)
Ductus choledochus
Ductus pancreaticus accessorius (Santorini)
Flexura superior duodeni
Ductus pancreaticus (Wirsungi)
Pars descendens duodeni (2nd part)
Papilla minor duodeni (inconstant)
Flexura duodenojejunalis
Jejunum
Plicae circulares (Valvulae Kerckringii)
Papilla major duodeni (Vateri)
Caput pancreatis
Pars ascendens duodeni (4th part)
Flexura inferior duodeni
A. and V. mesenterica superior
Pars inferior duodeni (Pars horizontalis duodeni) (3rd part)

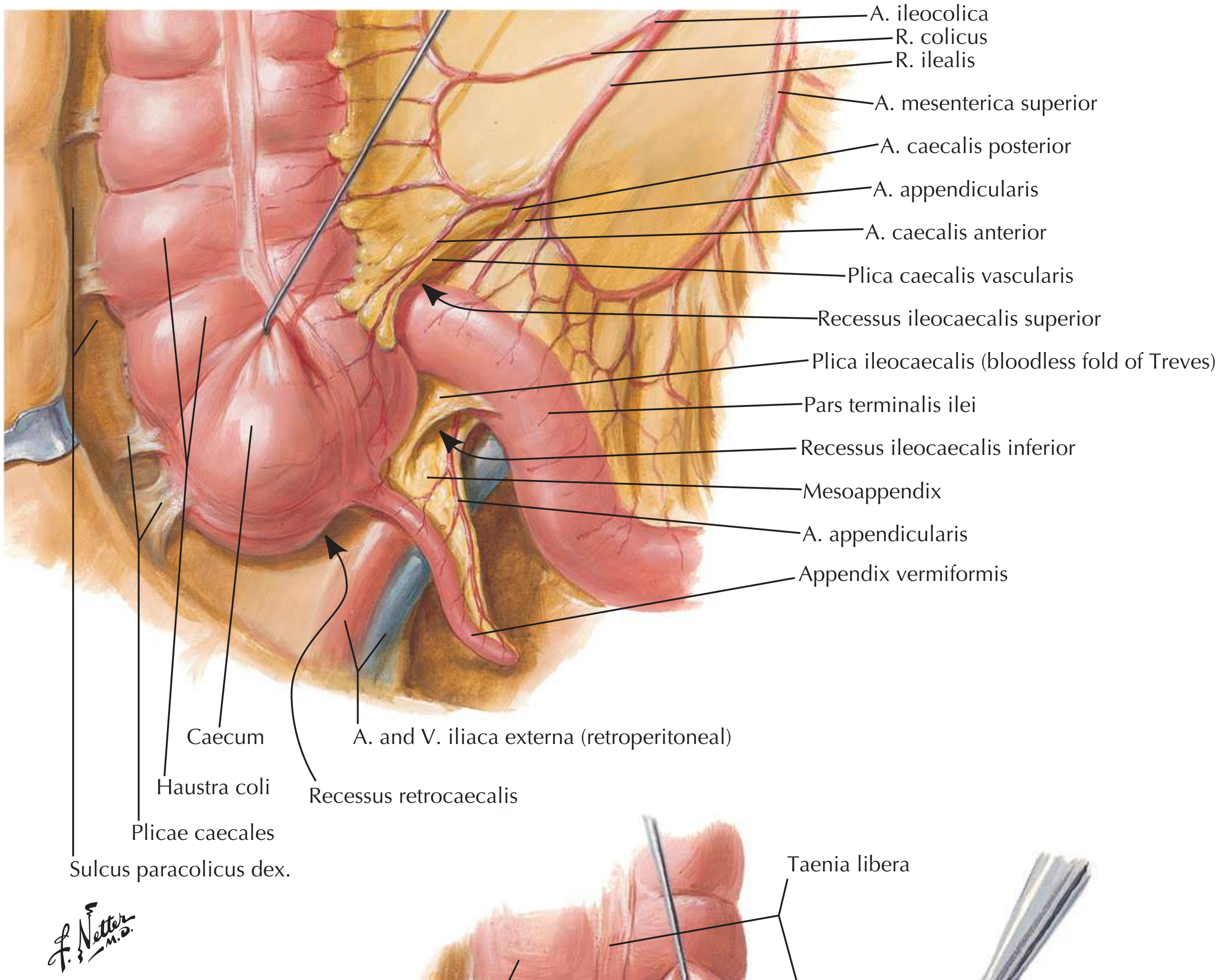
Jejunum

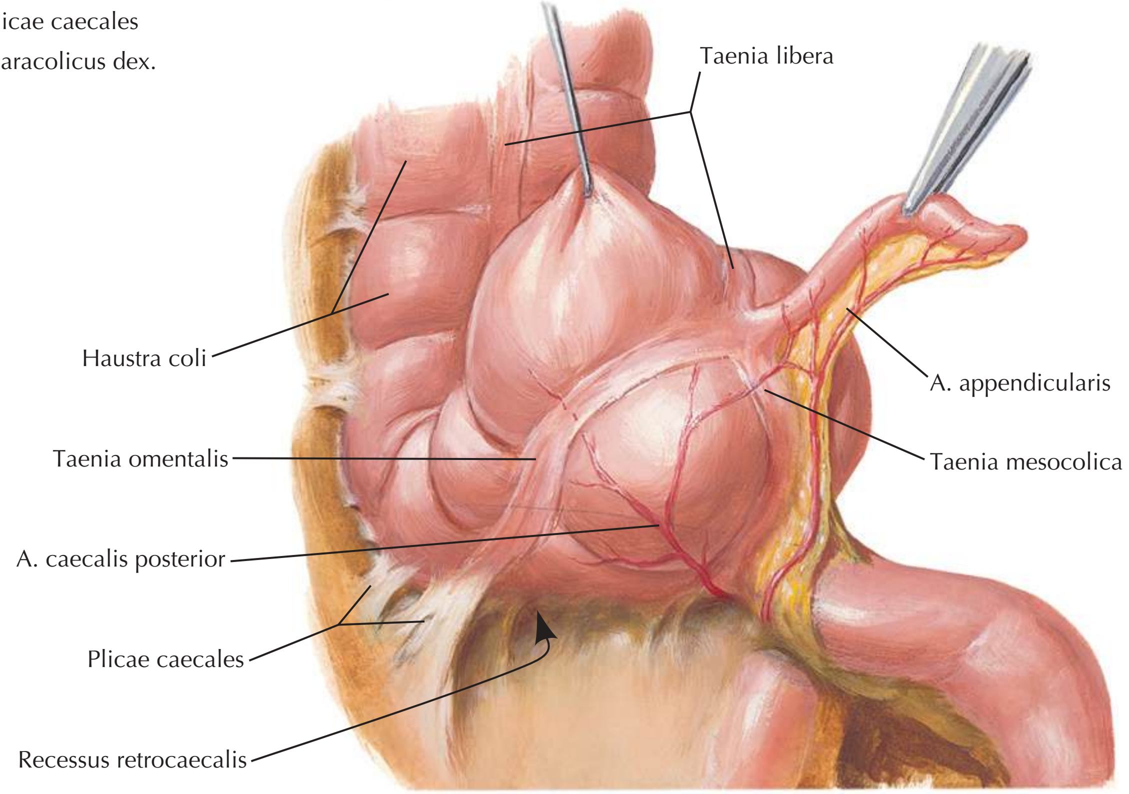
Ileum

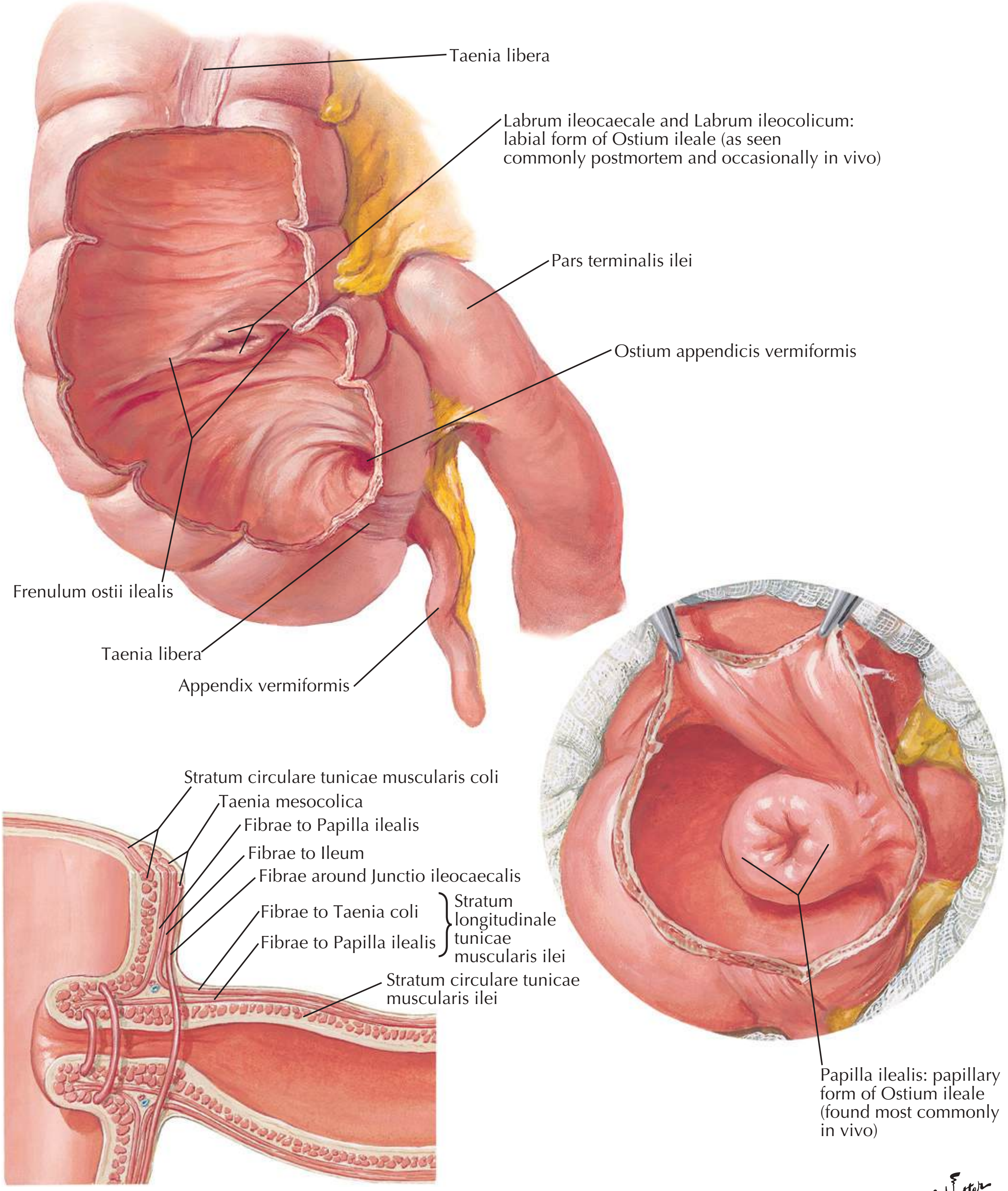

Mesenterium
Anastomosis arteriosa mesenterica (Arcus arteriosus) of Aa. jejunales
Aa. rectae
Tunica serosa (Peritoneum visceralis)
Stratum longitudinale tunicae muscularis
Stratum circulare tunicae muscularis
Tela submucosa
Tunica mucosa
Nodulus lymphoideus solitarius
Plicae circulares (Valvulae Kerckringii)
Mesenterium
Anastomoses arteriosae mesentericae (Arcus arteriosi) of Aa. ileales
Aa. rectae
Tunica serosa (Peritoneum visceralis)
Stratum longitudinale tunicae muscularis
Stratum circulare tunicae muscularis
Tela submucosa
Tunica mucosa
Plicae circulares (Valvulae Kerckringii)
Noduli lymphoidei solitarii
Noduli lymphoidei aggregati (Peyer's patch)
F. Netter M.D.

Ileocecal Region

See also Plates 294, 295

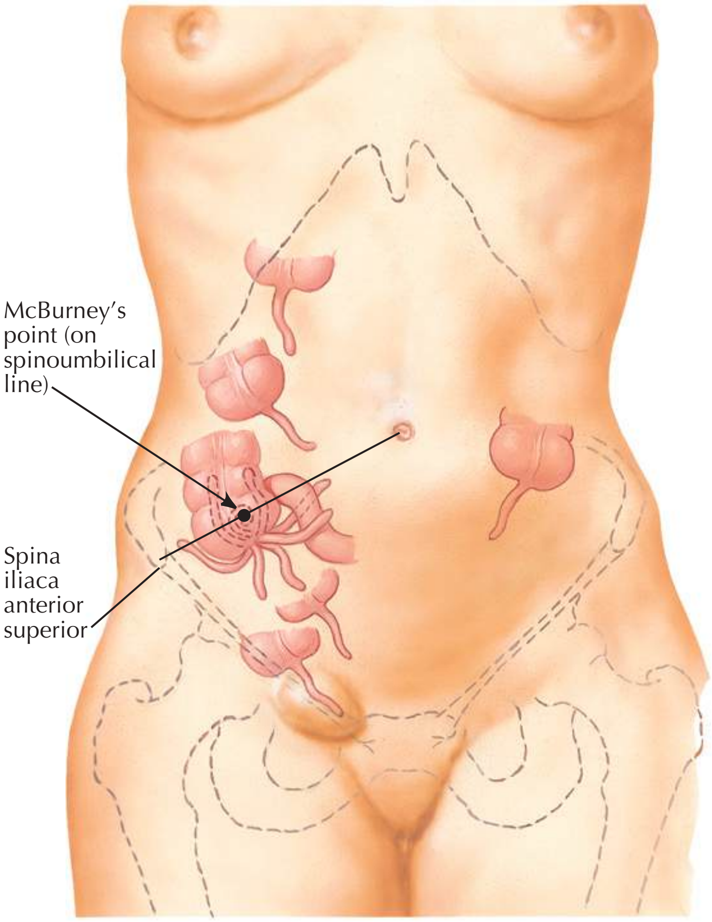

A. ileocolica
R. colicus
R. ilealis
A. mesenterica superior
A. caecalis posterior
A. appendicularis
A. caecalis anterior
Plica caecalis vascularis
Recessus ileocaecalis superior
Plica ileocaecalis (bloodless fold of Treves)
Pars terminalis ilei
Recessus ileocaecalis inferior
Mesoappendix
A. appendicularis
Appendix vermiformis
Caecum
A. and V. iliaca externa (retroperitoneal)
Haustra coli
Recessus retrocaecalis
Plicae caecales
Sulcus paracolicus dex.
f. Netter M.D.


Taenia libera
Haustra coli
A. appendicularis
Taenia mesocolica
Taenia omentalis
A. caecalis posterior
Plicae caecales
Recessus retrocaecalis

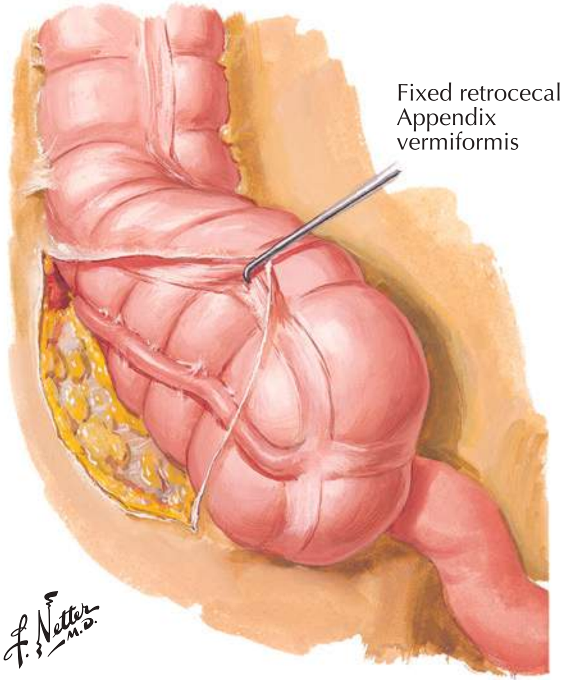

Taenia libera
Labrum ileocaecale and Labrum ileocolicum: labial form of Ostium ileale (as seen commonly postmortem and occasionally in vivo)
Pars terminalis ilei
Ostium appendicis vermiformis
Frenulum ostii ilealis
Taenia libera
Appendix vermiformis
Papilla ilealis: papillary form of Ostium ileale (found most commonly in vivo)
Stratum circulare tunicae muscularis coli
Taenia mesocolica
Fibrae to Papilla ilealis
Fibrae to Ileum
Fibrae around Junctio ileocaecalis
Fibrae to Taenia coli
Fibrae to Papilla ilealis
Stratum longitudinale tunicae muscularis ilei
Stratum circulare tunicae muscularis ilei

Schema of muscle fibers at Ostium ileale

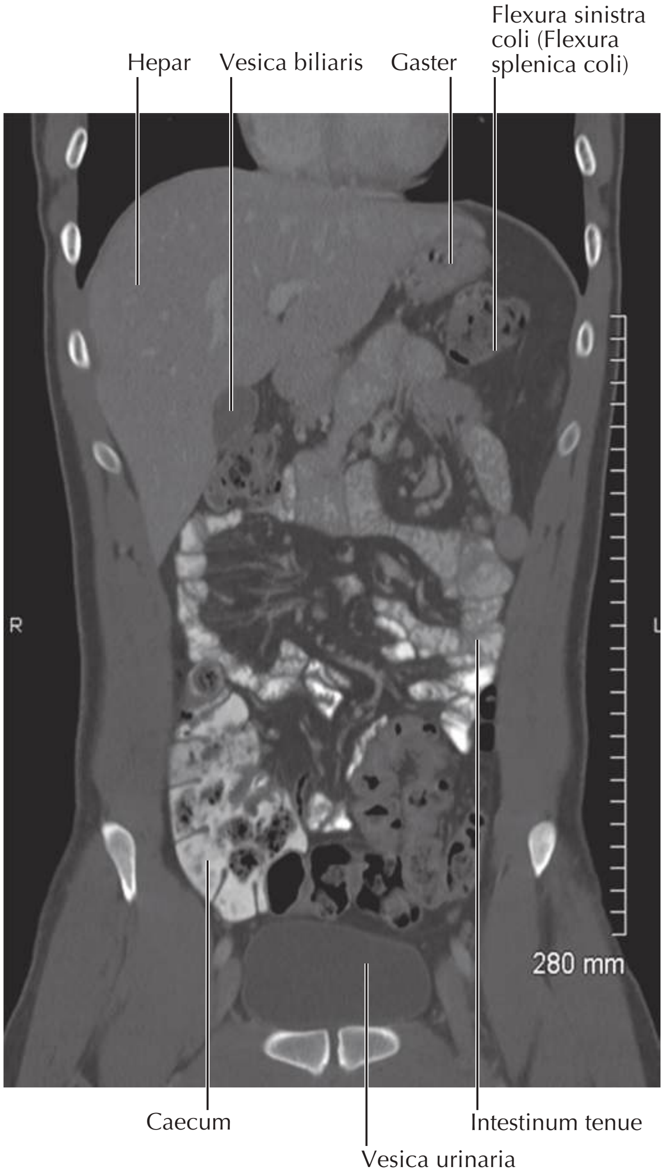
Vermiform Appendix


McBurney's point (on spinoumbilical line)
Spina iliaca anterior superior

Variations in position of appendix

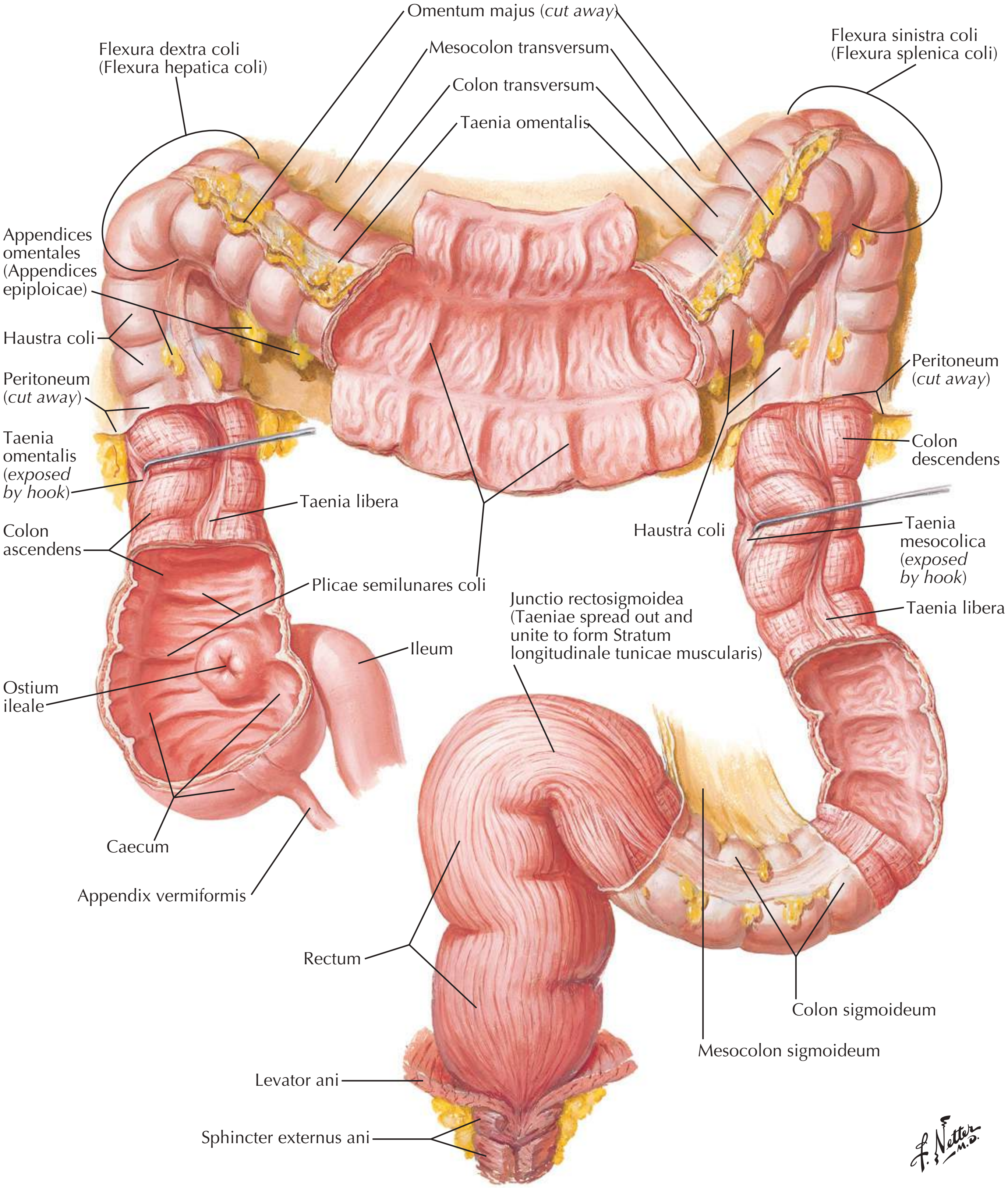

Fixed retrocecal Appendix vermiformis

Coronal CT image with oral and intravenous contrast


Hepar
Vesica biliaris
Gaster
Flexura sinistra coli (Flexura splenica coli)
R
L
280 mm
Caecum
Vesica urinaria
Intestinum tenue

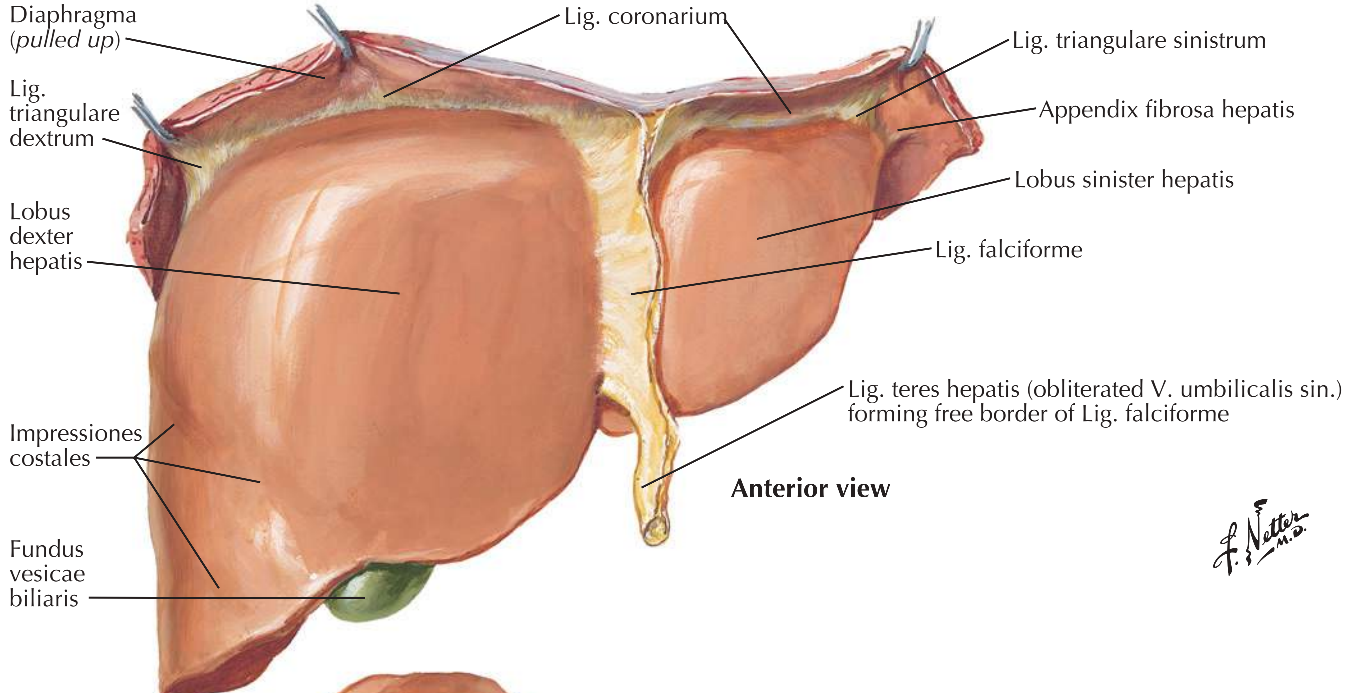
Mucosa and Musculature of Large Intestine

See also Plate 295

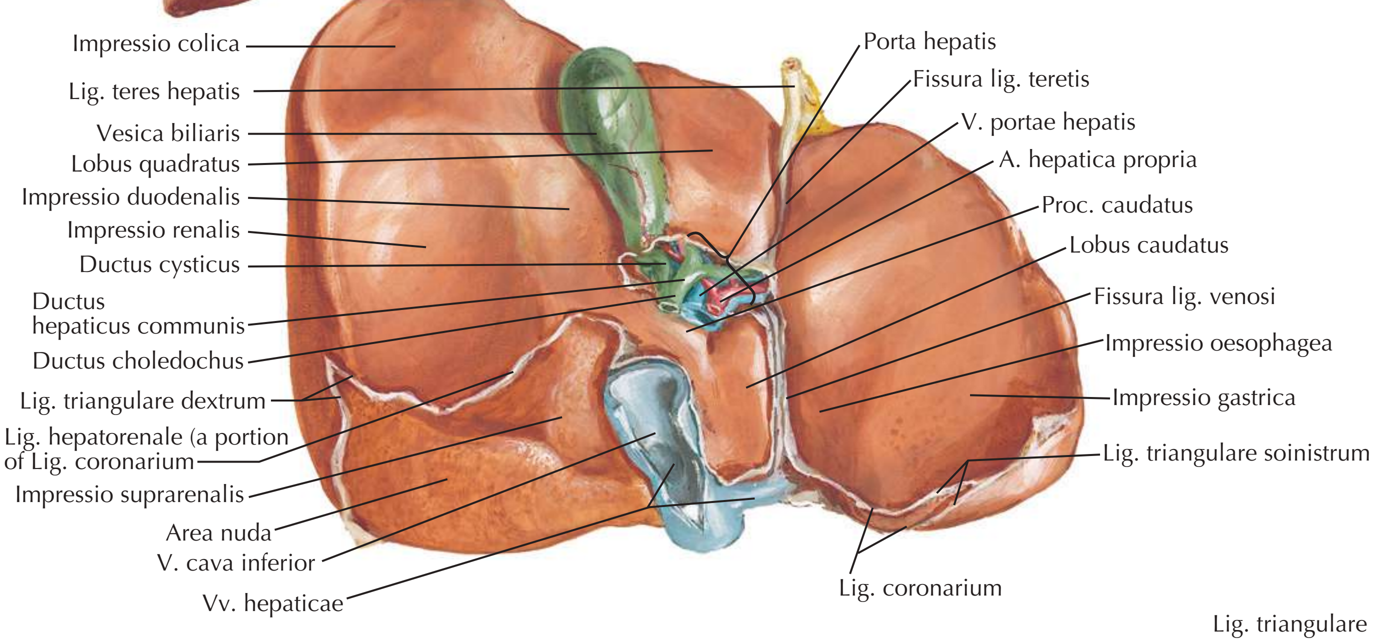

Omentum majus (*cut away*)
Mesocolon transversum
Colon transversum
Taenia omentalis
Flexura dextra coli (Flexura hepatica coli)
Flexura sinistra coli (Flexura splenica coli)
Appendices omentales (Appendices epiploicae)
Haustra coli
Peritoneum (*cut away*)
Taenia omentalis (*exposed by hook*)
Taenia libera
Colon ascendens
Plicae semilunares coli
Ileum
Ostium ileale
Caecum
Appendix vermiformis
Peritoneum (*cut away*)
Colon descendens
Haustra coli
Taenia mesocolica (*exposed by hook*)
Taenia libera
Junctio rectosigmoidea (Taeniae spread out and unite to form Stratum longitudinale tunicae muscularis)
Rectum
Colon sigmoideum
Mesocolon sigmoideum
Levator ani
Sphincter externus ani

Surfaces and Bed of Liver

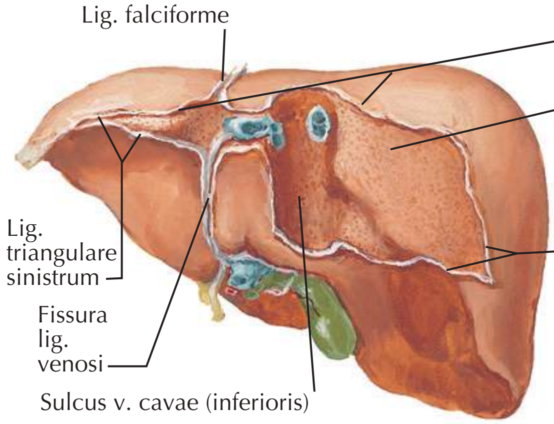
See also Plate 275


Diaphragma (pulled up)
Lig. coronarium
Lig. triangulare sinistrum
Appendix fibrosa hepatis
Lig. triangulare dextrum
Lobus sinister hepatis
Lobus dexter hepatis
Lig. falciforme
Lig. teres hepatis (obliterated V. umbilicalis sin.) forming free border of Lig. falciforme
Impressiones costales
Fundus vesicae biliaris

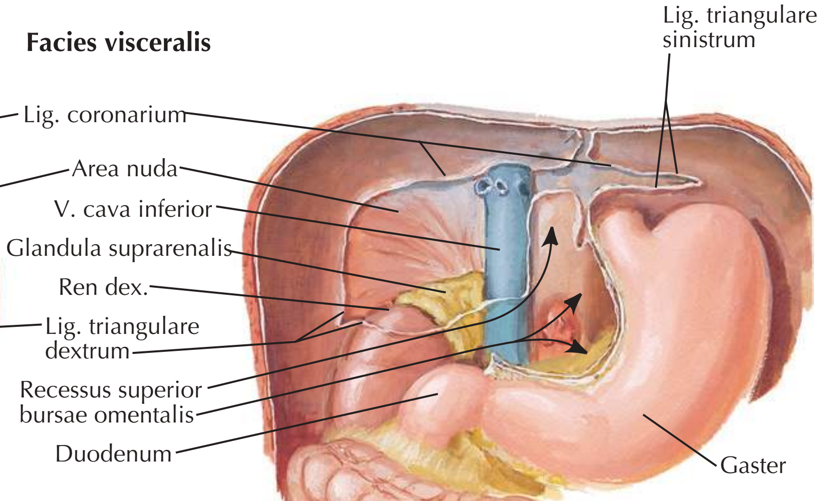
Anterior view


Impressio colica
Porta hepatis
Lig. teres hepatis
Fissura lig. teretis
Vesica biliaris
V. portae hepatis
Lobus quadratus
A. hepatica propria
Impressio duodenalis
Proc. caudatus
Impressio renalis
Lobus caudatus
Ductus cysticus
Fissura lig. venosi
Ductus hepaticus communis
Impressio oesophagea
Ductus choledochus
Impressio gastrica
Lig. triangulare dextrum
Lig. hepatorenale (a portion of Lig. coronarium
Lig. triangulare soinistrum
Impressio suprarenalis
Area nuda
V. cava inferior
Lig. coronarium
Vv. hepaticae

Facies visceralis


Lig. falciforme
Lig. triangulare sinistrum
Fissura lig. venosi
Sulcus v. cavae (inferioris)

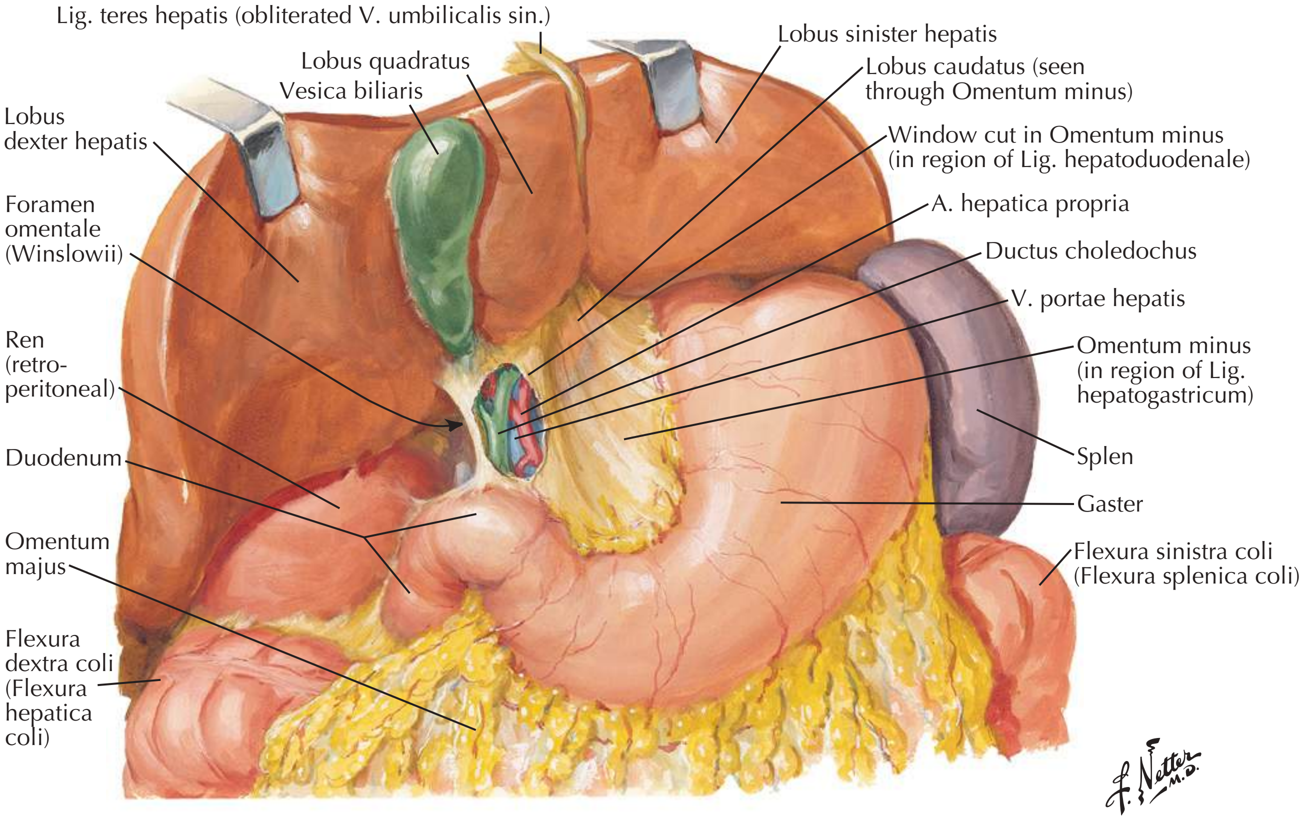
Posterior view

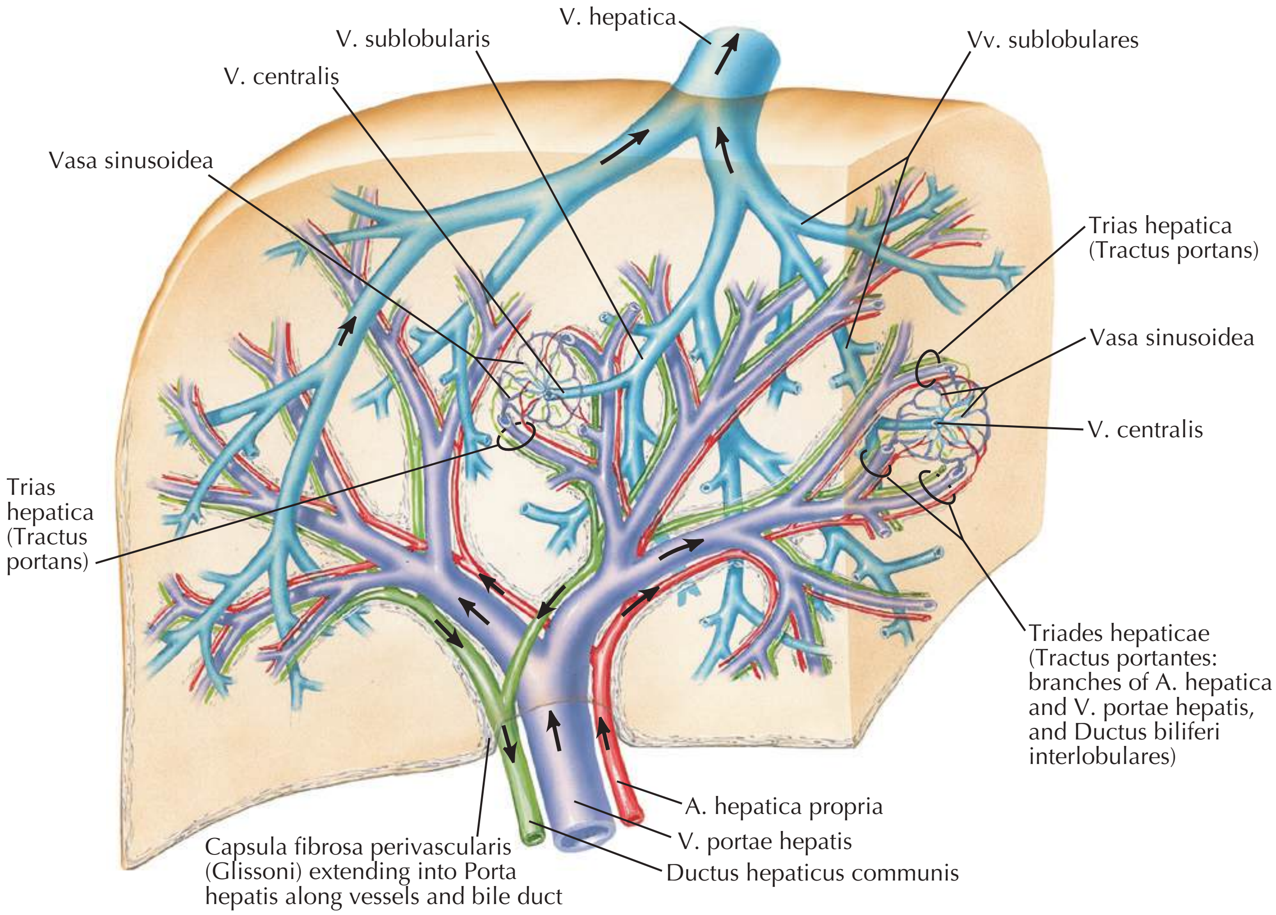

Lig. triangulare sinistrum
Lig. coronarium
Area nuda
V. cava inferior
Glandula suprarenalis
Ren dex.
Lig. triangulare dextrum
Recessus superior bursae omentalis
Duodenum
Gaster

Bed of liver

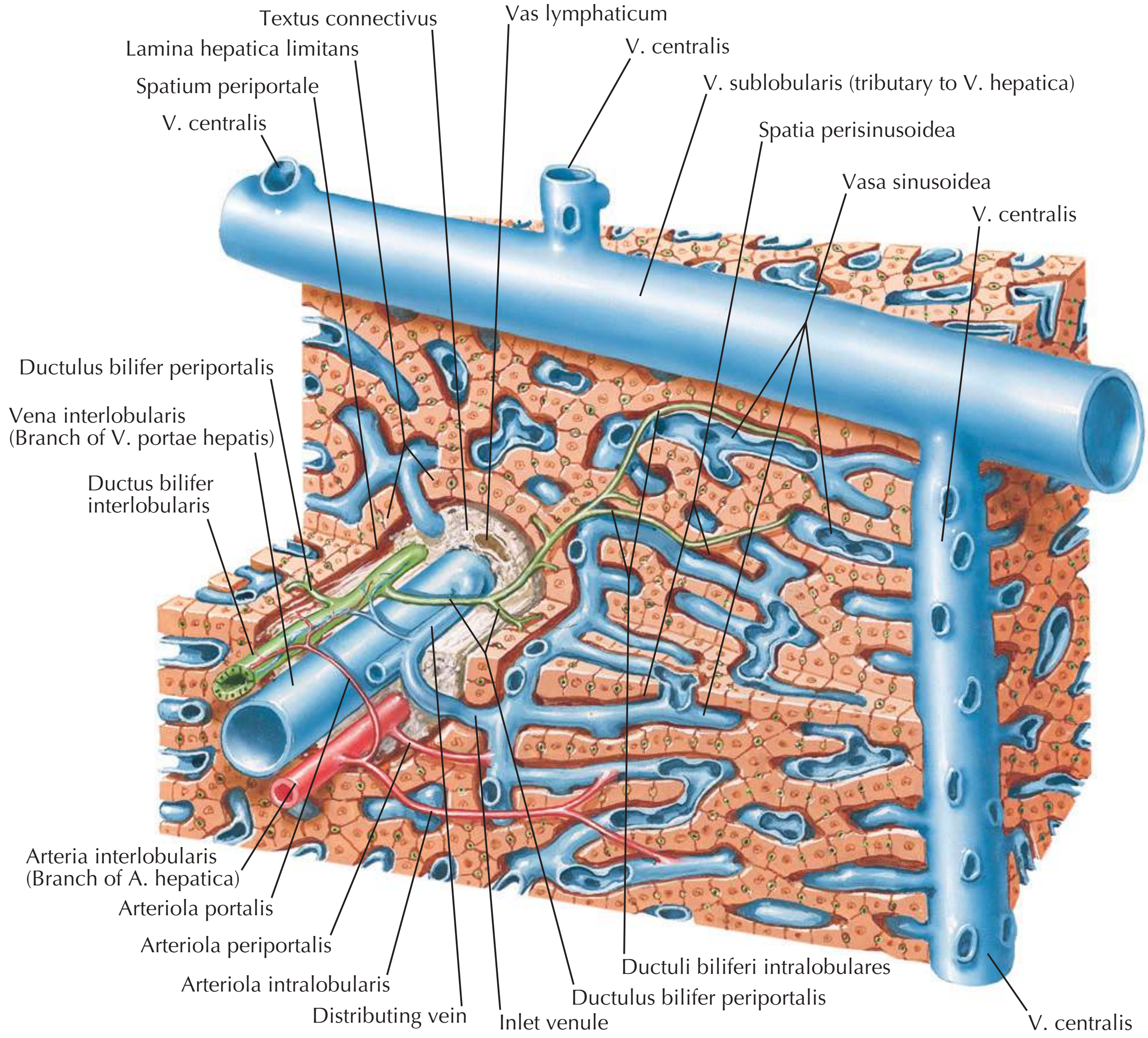
Liver in Situ: Vascular and Duct Systems

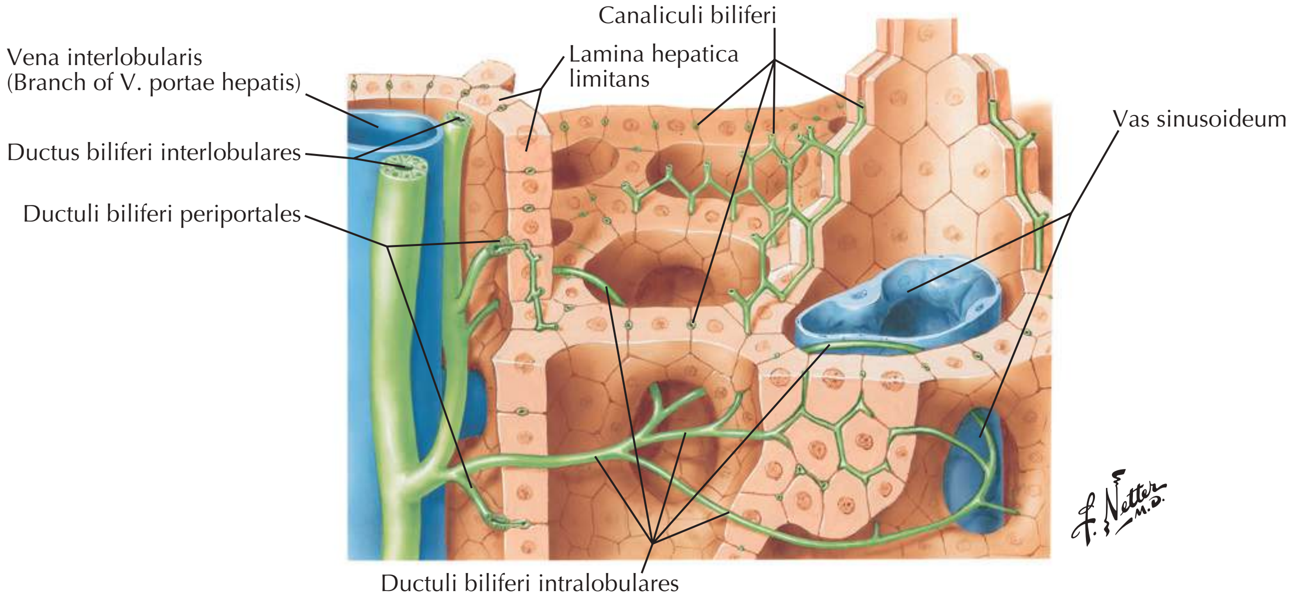
See also Plate 274

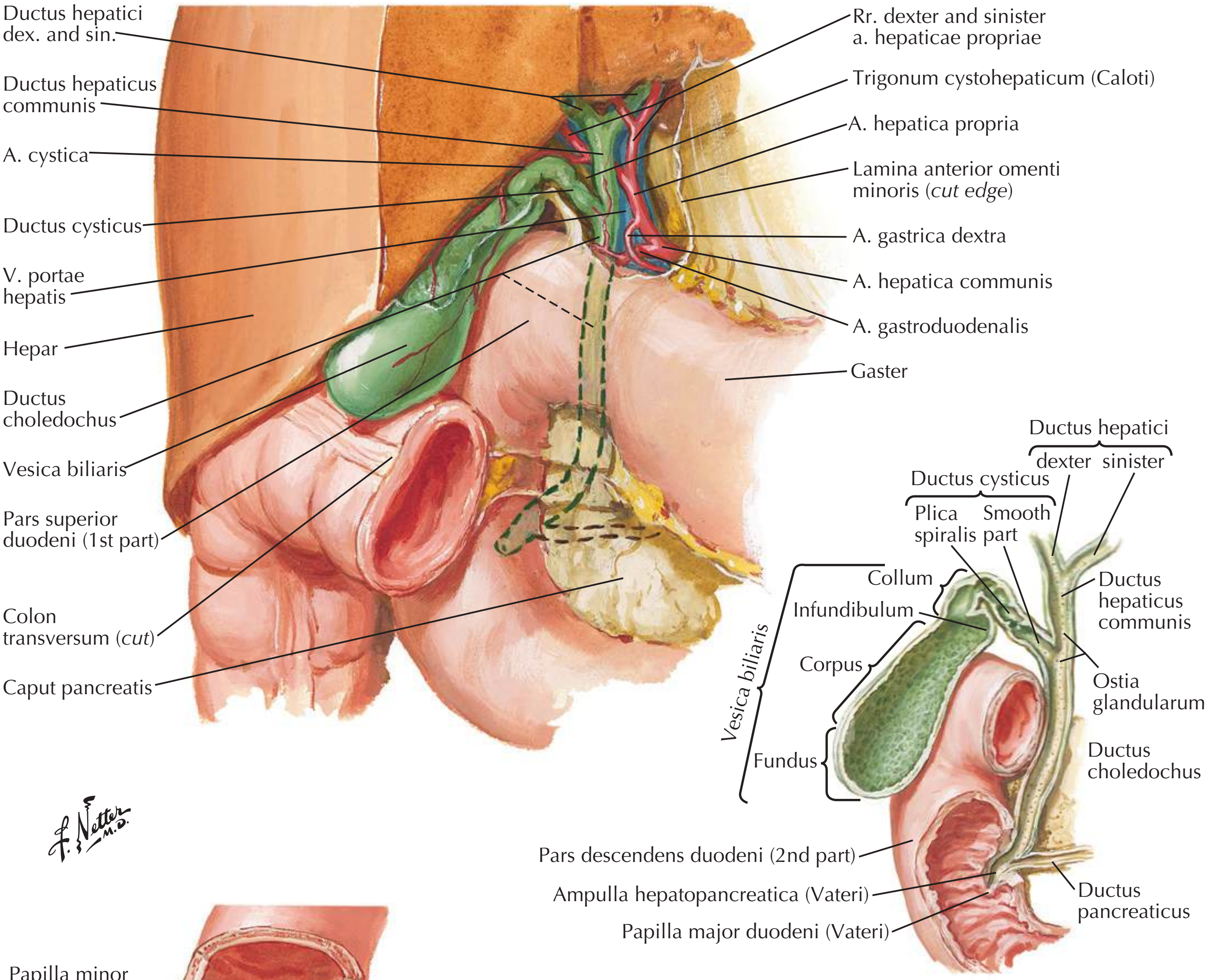

Lig. teres hepatis (obliterated V. umbilicalis sin.)
Lobus quadratus
Vesica biliaris
Lobus dexter hepatis
Foramen omentale (Winslowii)
Ren (retro-peritoneal)
Duodenum
Omentum majus
Flexura dextra coli (Flexura hepatica coli)
Lobus sinister hepatis
Lobus caudatus (seen through Omentum minus)
Window cut in Omentum minus (in region of Lig. hepatoduodenale)
A. hepatica propria
Ductus choledochus
V. portae hepatis
Omentum minus (in region of Lig. hepatogastricum)
Splen
Gaster
Flexura sinistra coli (Flexura splenica coli)

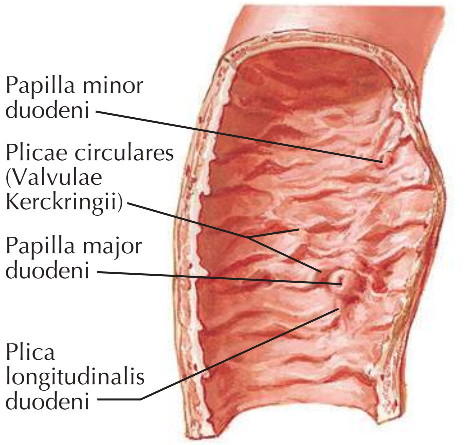

V. hepatica
V. sublobularis
V. centralis
Vasa sinusoidea
Vv. sublobulares
Trias hepatica (Tractus portans)
Vasa sinusoidea
V. centralis
Trias hepatica (Tractus portans)
Triades hepaticae (Tractus portantes: branches of A. hepatica and V. portae hepatis, and Ductus biliferi interlobulares)
A. hepatica propria
V. portae hepatis
Ductus hepaticus communis
Capsula fibrosa perivascularis (Glissoni) extending into Porta hepatis along vessels and bile duct

Liver Structure: Schema

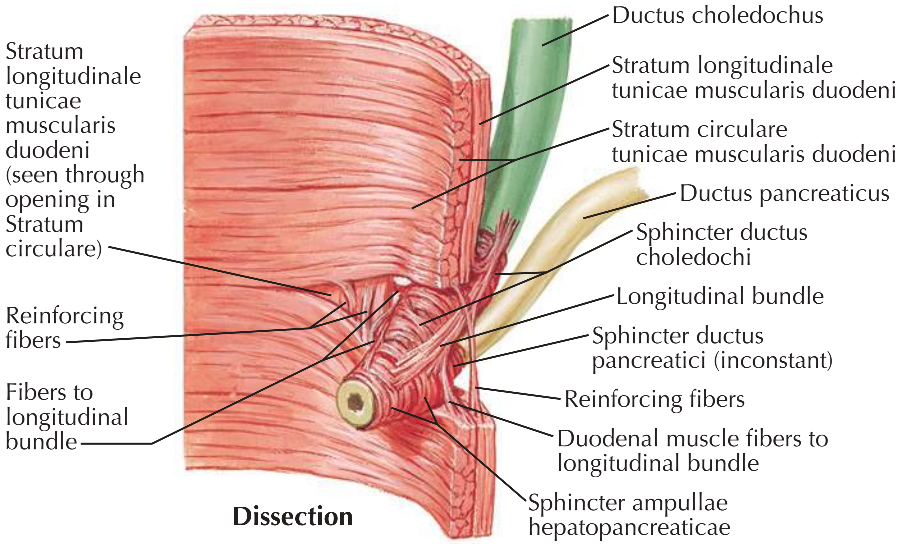

Textus connectivus
Lamina hepatica limitans
Spatium periportale
V. centralis
Vas lymphaticum
V. centralis
V. sublobularis (tributary to V. hepatica)
Spatia perisinusoidea
Vasa sinusoidea
V. centralis
Ductulus bilifer periportalis
Vena interlobularis
(Branch of V. portae hepatis)
Ductus bilifer
interlobularis
Arteria interlobularis
(Branch of A. hepatica)
Arteriola portalis
Arteriola periportalis
Arteriola intralobularis
Distributing vein
Inlet venule
Ductuli biliferi intralobulares
Ductulus bilifer periportalis
V. centralis


Canaliculi biliferi
Lamina hepatica
limitans
Vena interlobularis
(Branch of V. portae hepatis)
Ductus biliferi interlobulares
Ductuli biliferi periportales
Vas sinusoideum
Ductuli biliferi intralobulares


Ductus hepatici dex. and sin.
Ductus hepaticus communis
A. cystica
Ductus cysticus
V. portae hepatis
Hepar
Ductus choledochus
Vesica biliaris
Pars superior duodeni (1st part)
Colon transversum (*cut*)
Caput pancreatis
Rr. dexter and sinister a. hepaticae propriae
Trigonum cystohepaticum (Caloti)
A. hepatica propria
Lamina anterior omenti minoris (*cut edge*)
A. gastrica dextra
A. hepatica communis
A. gastroduodenalis
Gaster
F. Netter M.D.
Ductus hepatici
dexter sinister
Ductus cysticus
Plica spiralis
Smooth part
Collum
Infundibulum
Corpus
Fundus
Vesica biliaris
Ductus hepaticus communis
Ostia glandularum
Ductus choledochus
Pars descendens duodeni (2nd part)
Ampulla hepatopancreatica (Vateri)
Papilla major duodeni (Vateri)
Ductus pancreaticus

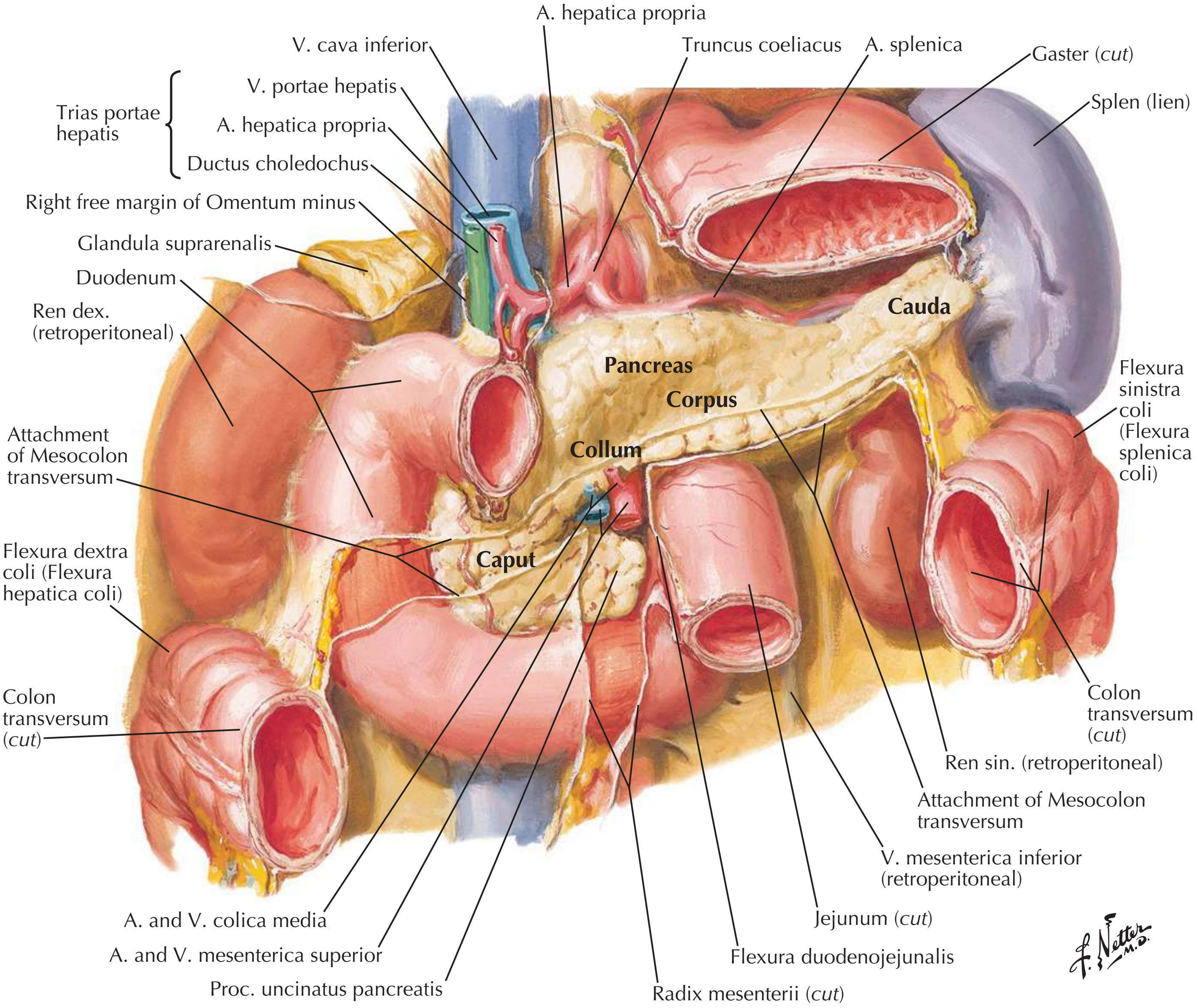

Papilla minor duodeni
Plicae circulares (Valvulae Kerckringii)
Papilla major duodeni
Plica longitudinalis duodeni

Interior of pars descendens duodeni (2nd part)

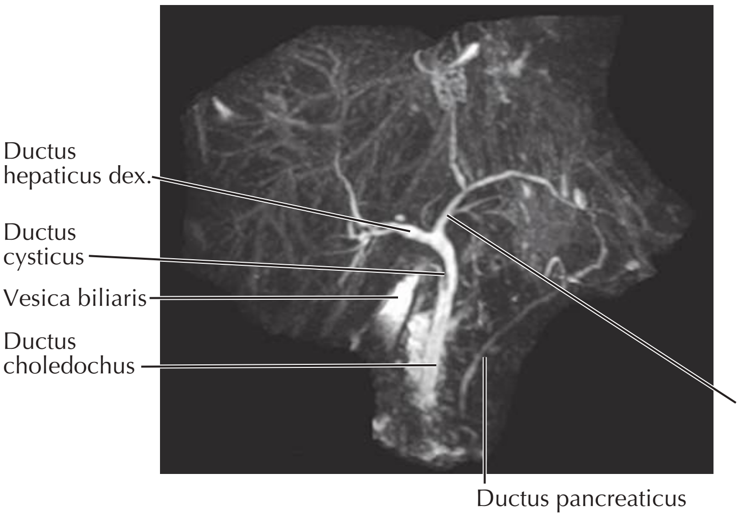

Stratum longitudinale tunicae muscularis duodeni (seen through opening in Stratum circulare)
Reinforcing fibers
Fibers to longitudinal bundle
Ductus choledochus
Stratum longitudinale tunicae muscularis duodeni
Stratum circulare tunicae muscularis duodeni
Ductus pancreaticus
Sphincter ductus choledochi
Longitudinal bundle
Sphincter ductus pancreatici (inconstant)
Reinforcing fibers
Duodenal muscle fibers to longitudinal bundle
Sphincter ampullae hepatopancreaticae

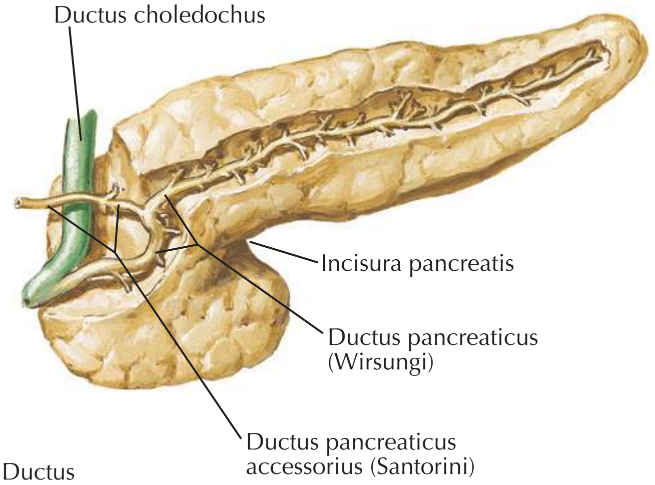
Dissection

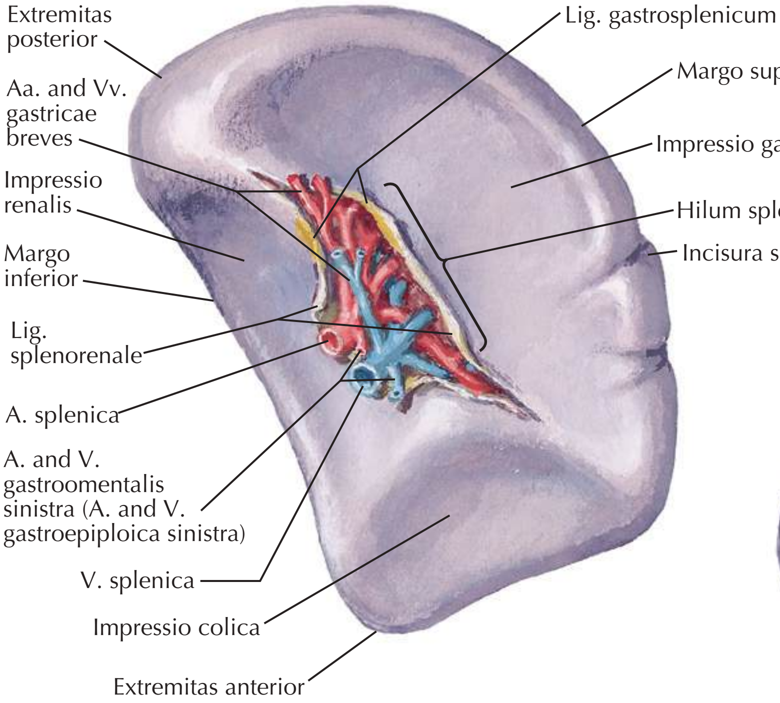
Pancreas in Situ


A. hepatica propria
V. cava inferior
Truncus coeliacus
A. splenica
Gaster (*cut*)
Splen (lien)
Trias portae hepatis
V. portae hepatis
A. hepatica propria
Ductus choledochus
Right free margin of Omentum minus
Glandula suprarenalis
Duodenum
Ren dex. (retroperitoneal)
Cauda
Pancreas
Corpus
Collum
Caput
Flexura sinistra coli (Flexura splenica coli)
Attachment of Mesocolon transversum
Flexura dextra coli (Flexura hepatica coli)
Colon transversum (*cut*)
Colon transversum (*cut*)
Ren sin. (retroperitoneal)
Attachment of Mesocolon transversum
V. mesenterica inferior (retroperitoneal)
A. and V. colica media
Jejunum (*cut*)
A. and V. mesenterica superior
Flexura duodenojejunalis
Proc. uncinatus pancreatis
Radix mesenterii (*cut*)

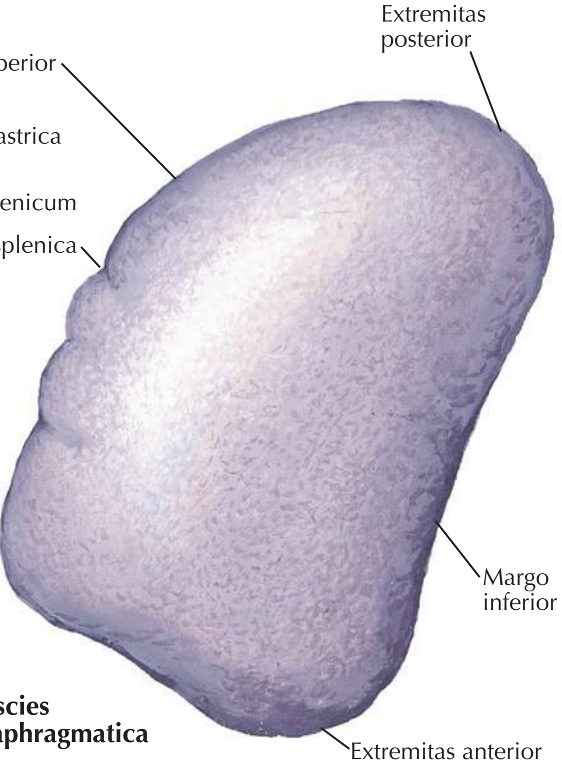
Magnetic resonance cholangiopancreatography (MRCP)


Ductus hepaticus dex.
Ductus cysticus
Vesica biliaris
Ductus choledochus
Ductus hepaticus sin.
Ductus pancreaticus

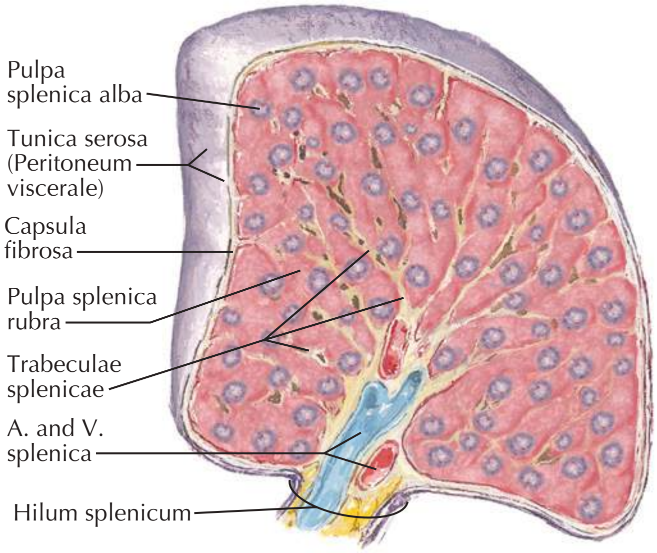

Ductus choledochus
Incisura pancreatis
Ductus pancreaticus (Wirsungi)
Ductus pancreaticus accessorius (Santorini)


Extremitas posterior
Aa. and Vv. gastricae breves
Impressio renalis
Margo inferior
Lig. splenorenale
A. splenica
A. and V. gastroomentalis sinistra (A. and V. gastroepiploica sinistra)
V. splenica
Impressio colica
Extremitas anterior
Lig. gastrosplenicum
Margo superior
Impressio gastrica
Hilum splenicum
Incisura splenica

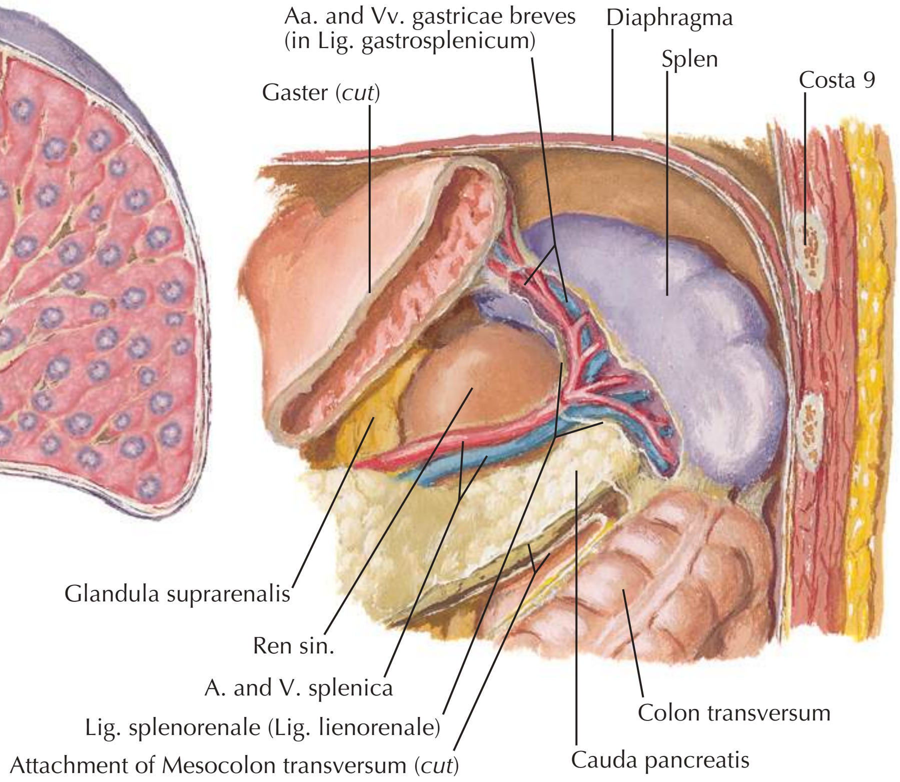
Facies visceralis


Extremitas posterior
Margo inferior
Extremitas anterior

Fascies diaphragmatica

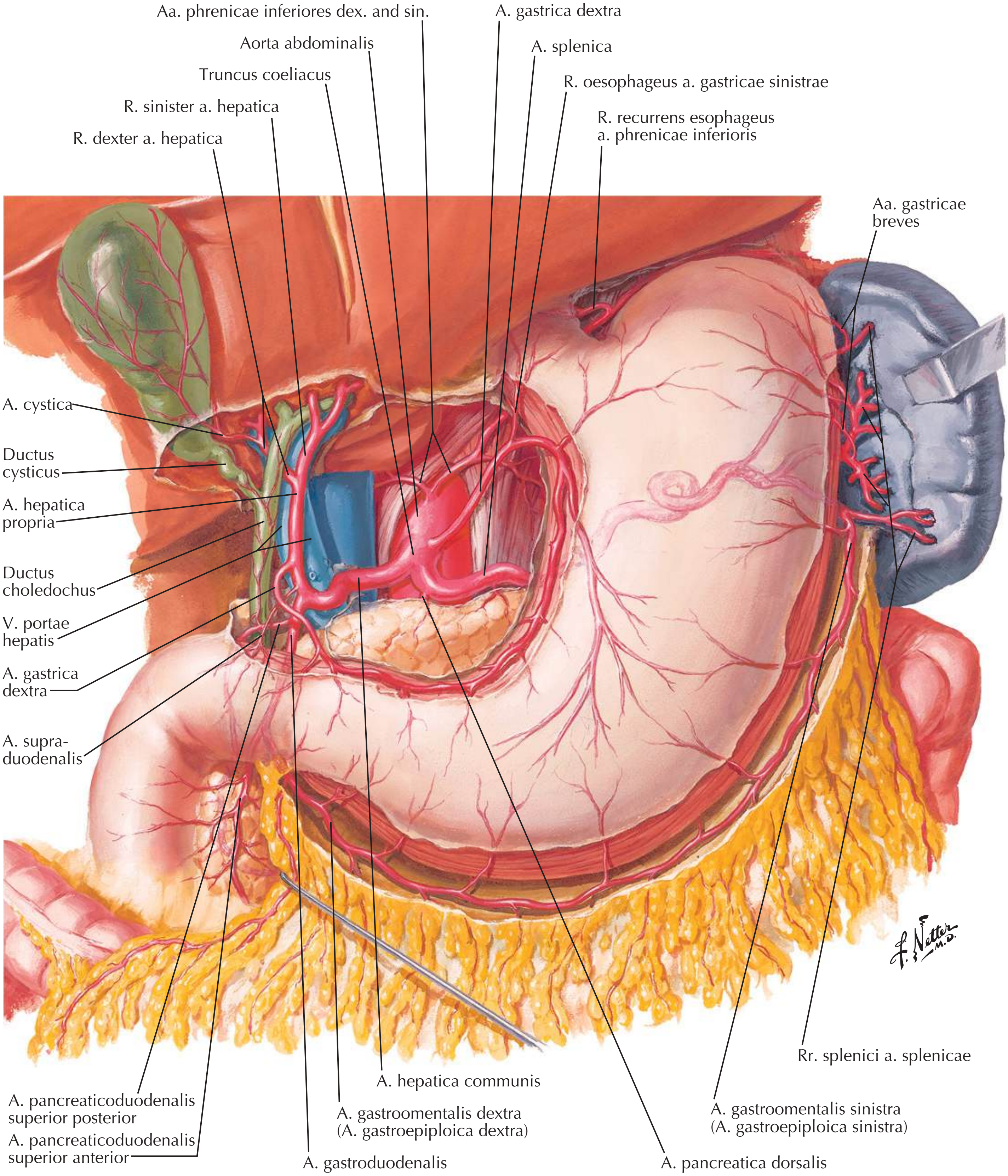

Pulpa splenica alba
Tunica serosa (Peritoneum viscerale)
Capsula fibrosa
Pulpa splenica rubra
Trabeculae splenicae
A. and V. splenica
Hilum splenicum

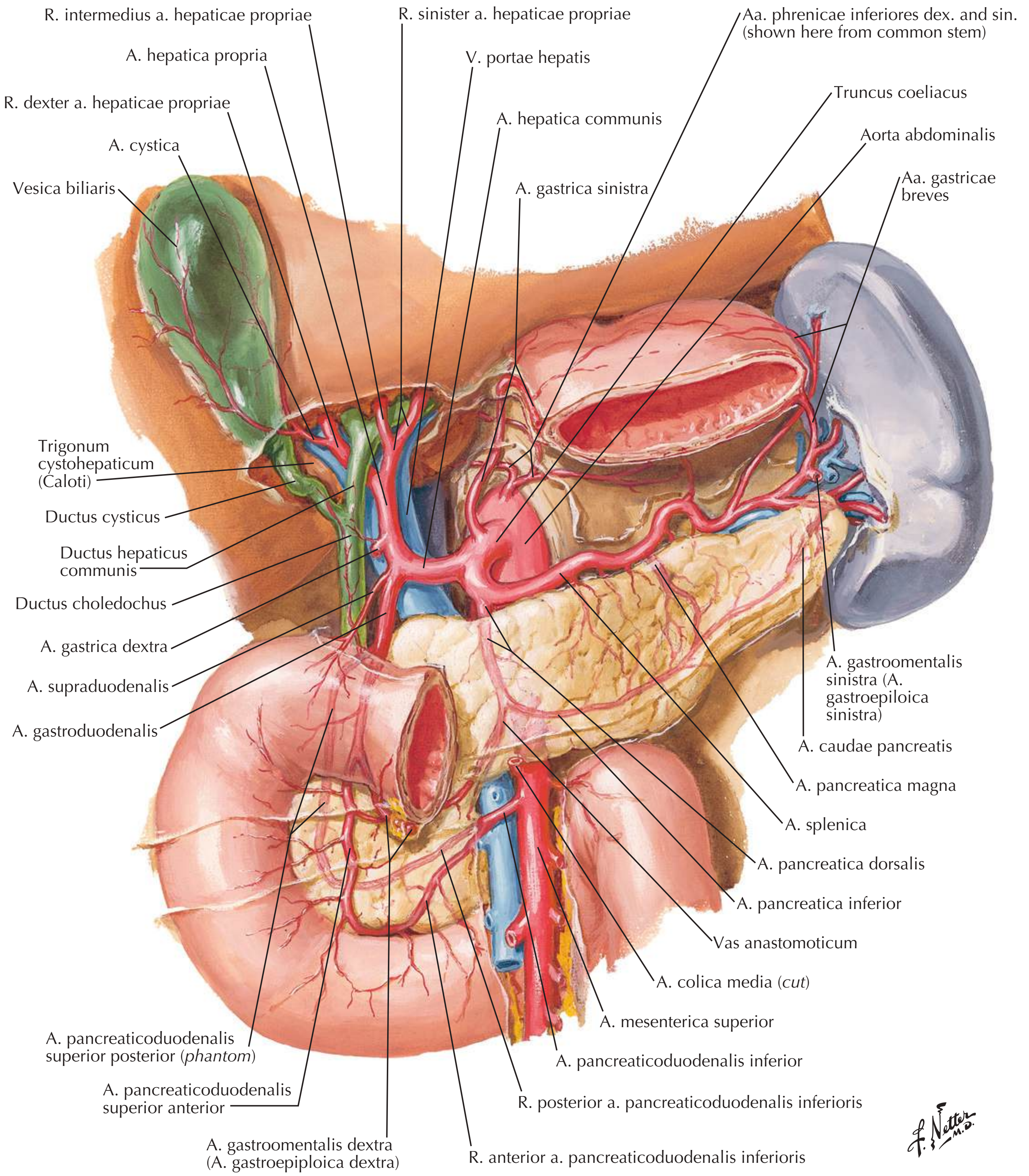
Cross section


Aa. and Vv. gastricae breves (in Lig. gastrosplenicum)
Diaphragma
Splen
Costa 9
Gaster (*cut*)
Glandula suprarenalis
Ren sin.
A. and V. splenica
Lig. splenorenale (Lig. lienorenale)
Attachment of Mesocolon transversum (*cut*)
Colon transversum
Cauda pancreatis

Spleen in situ

F. Netter M.D.

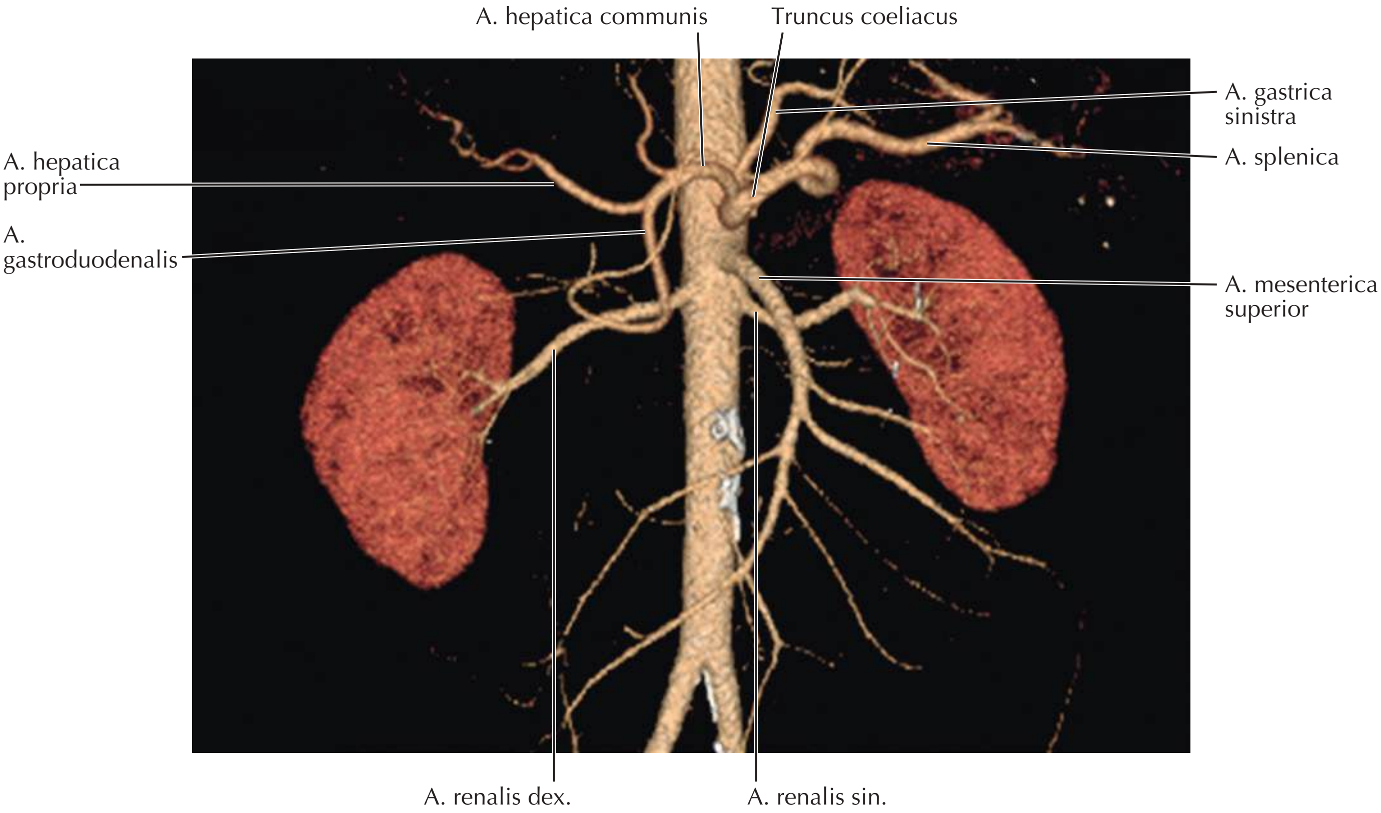

Aa. phrenicae inferiores dex. and sin.
Aorta abdominalis
Truncus coeliacus
R. sinister a. hepatica
R. dexter a. hepatica
A. gastrica dextra
A. splenica
R. oesophageus a. gastricae sinistrae
R. recurrens esophageus a. phrenicae inferioris
Aa. gastricae breves
A. cystica
Ductus cysticus
A. hepatica propria
Ductus choledochus
V. portae hepatis
A. gastrica dextra
A. supra-duodenalis
Rr. splenici a. splenicae
A. hepatica communis
A. pancreaticoduodenalis superior posterior
A. pancreaticoduodenalis superior anterior
A. gastroomentalis dextra (A. gastroepiploica dextra)
A. gastroduodenalis
A. gastroomentalis sinistra (A. gastroepiploica sinistra)
A. pancreatica dorsalis


R. intermedius a. hepaticae propriae
R. sinister a. hepaticae propriae
Aa. phrenicae inferiores dex. and sin. (shown here from common stem)
A. hepatica propria
V. portae hepatis
Truncus coeliacus
R. dexter a. hepaticae propriae
A. hepatica communis
Aorta abdominalis
A. cystica
A. gastrica sinistra
Aa. gastricae breves
Vesica biliaris
Trigonum cystohepaticum (Caloti)
Ductus cysticus
Ductus hepaticus communis
Ductus choledochus
A. gastrica dextra
A. supraduodenalis
A. gastroduodenalis
A. gastroomentalis sinistra (A. gastroepiloica sinistra)
A. caudae pancreatis
A. pancreatica magna
A. splenica
A. pancreatica dorsalis
A. pancreatica inferior
Vas anastomoticum
A. colica media (*cut*)
A. mesenterica superior
A. pancreaticoduodenalis superior posterior (*phantom*)
A. pancreaticoduodenalis inferior
A. pancreaticoduodenalis superior anterior
R. posterior a. pancreaticoduodenalis inferioris
A. gastroomentalis dextra (A. gastroepiloica dextra)
R. anterior a. pancreaticoduodenalis inferioris
F. Netter M.D.

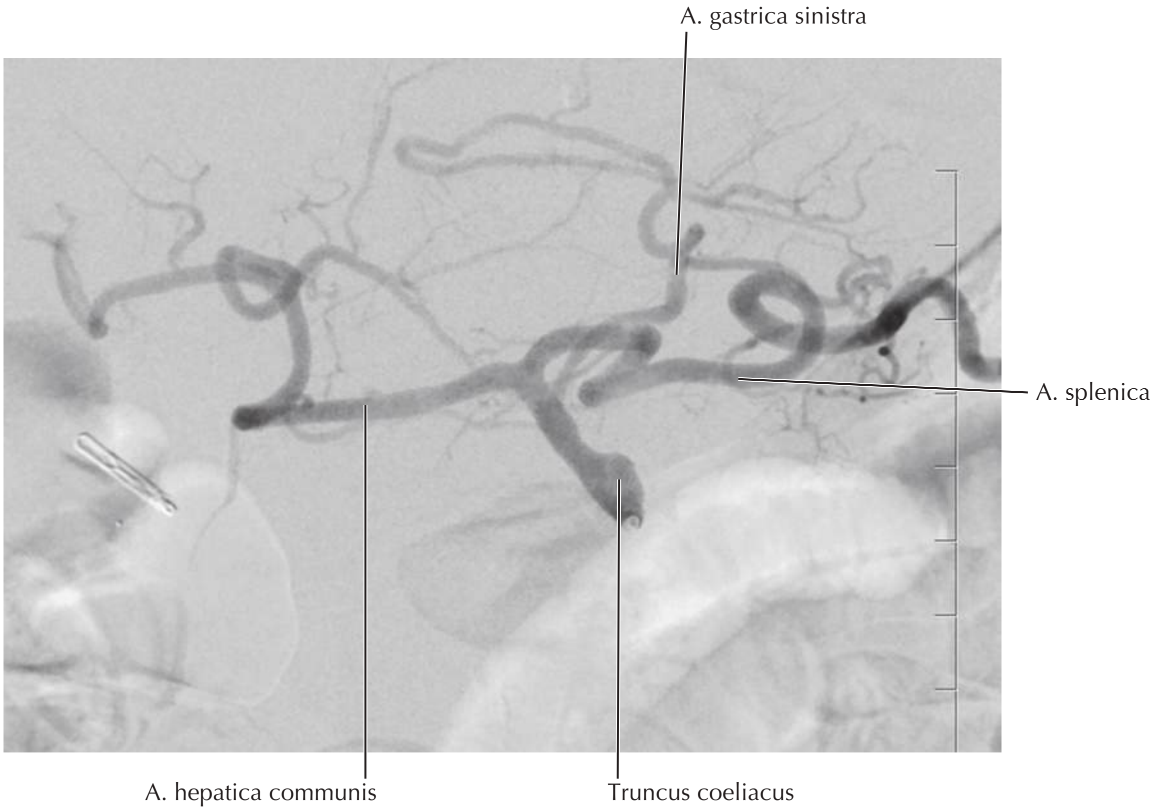
Celiac Arteriogram and CT Angiogram

See also Plates 290, 291

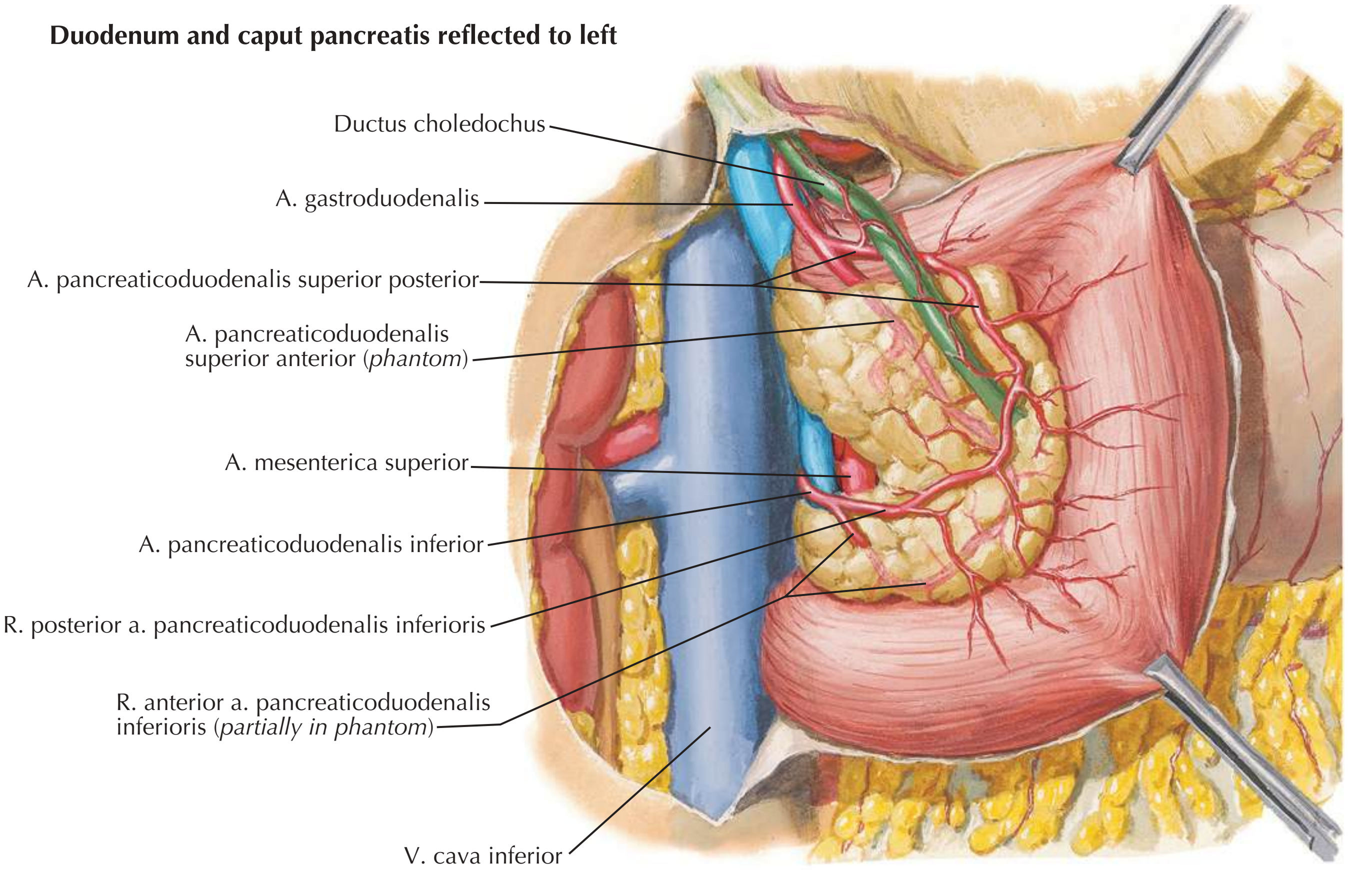
3D volume-rendered CT image with intravenous contrast enhancement

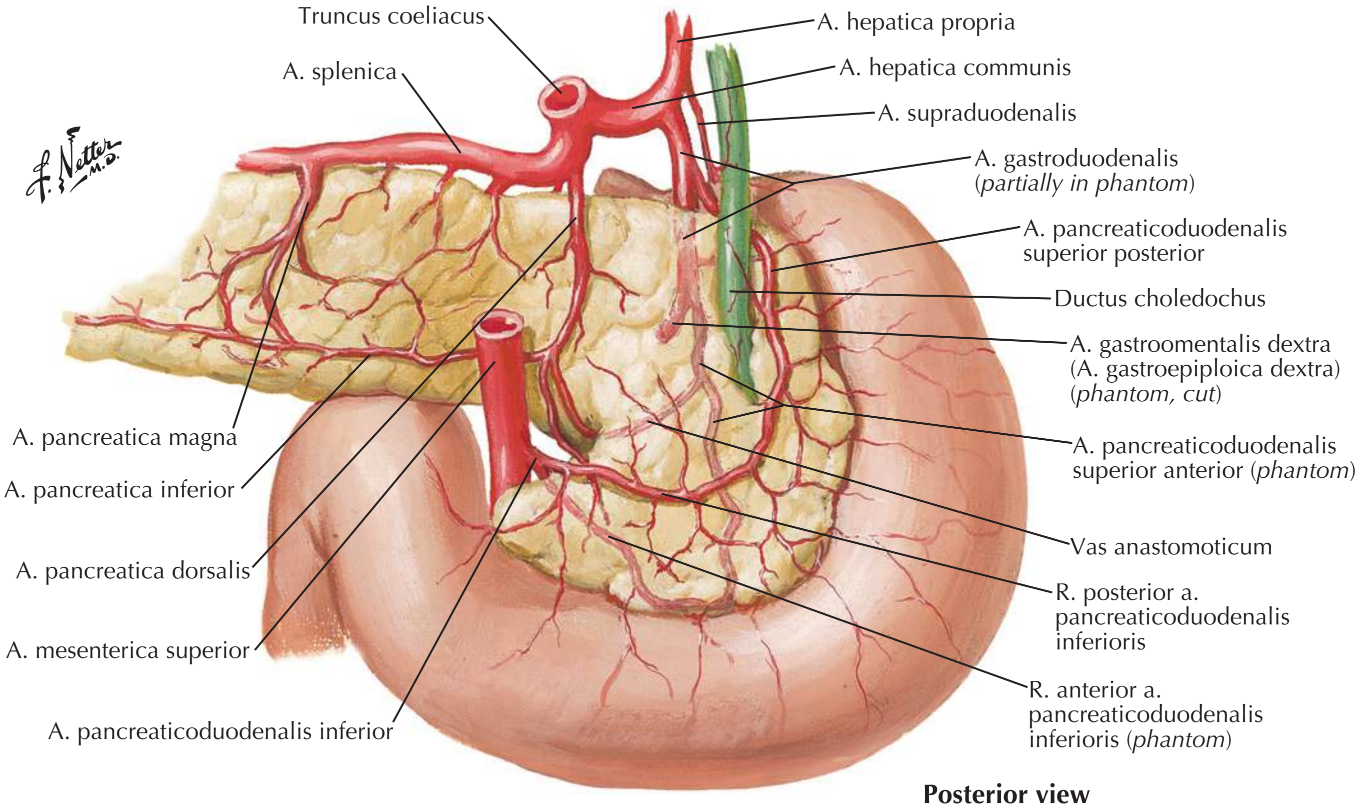

A. hepatica communis
Truncus coeliacus
A. gastrica sinistra
A. splenica
A. hepatica propria
A. gastroduodenalis
A. mesenterica superior
A. renalis dex.
A. renalis sin.

Selective digital subtraction angiogram, Truncus coeliacus


A. gastrica sinistra
A. splenica
A. hepatica communis
Truncus coeliacus

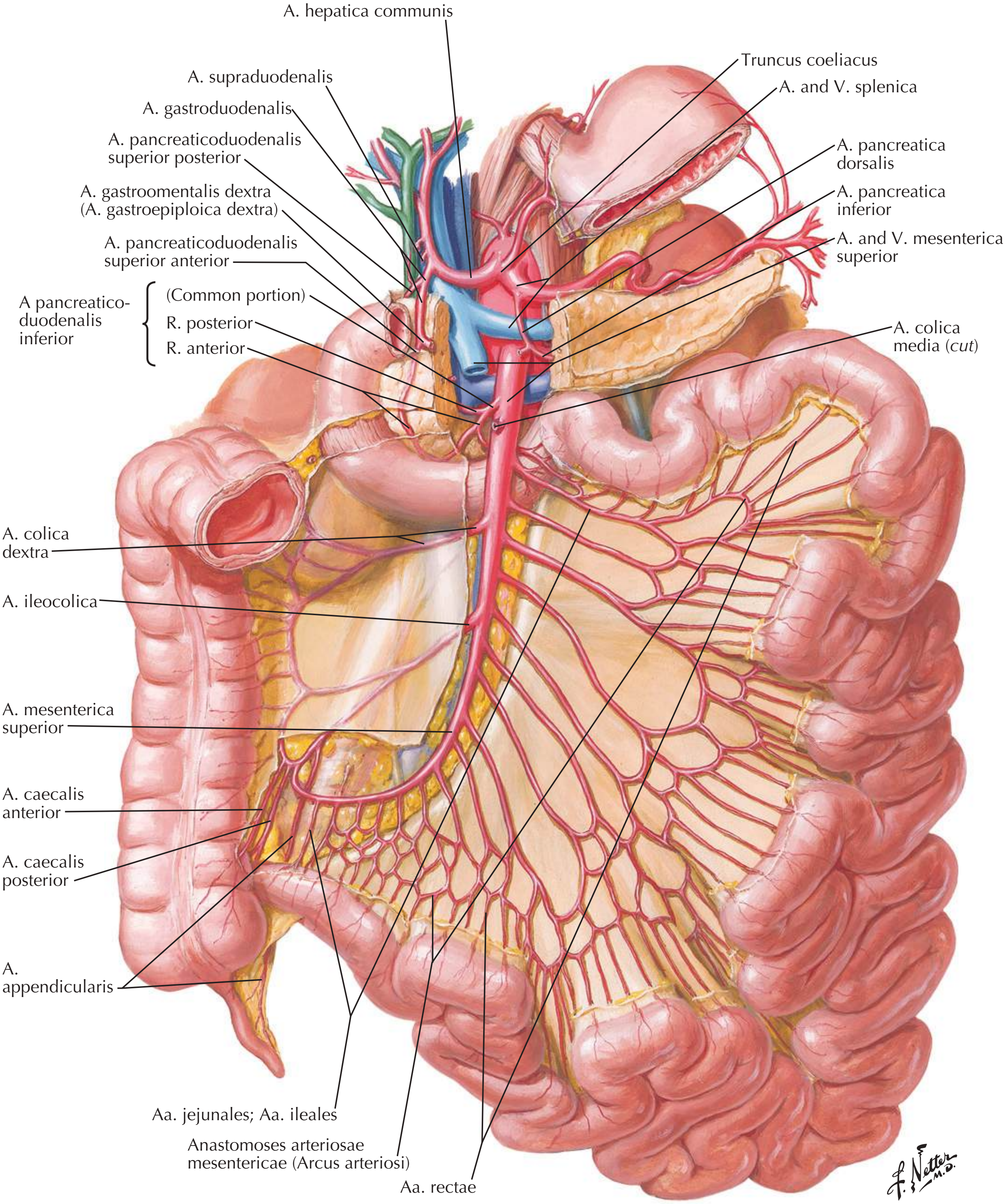
Duodenum and caput pancreatis reflected to left

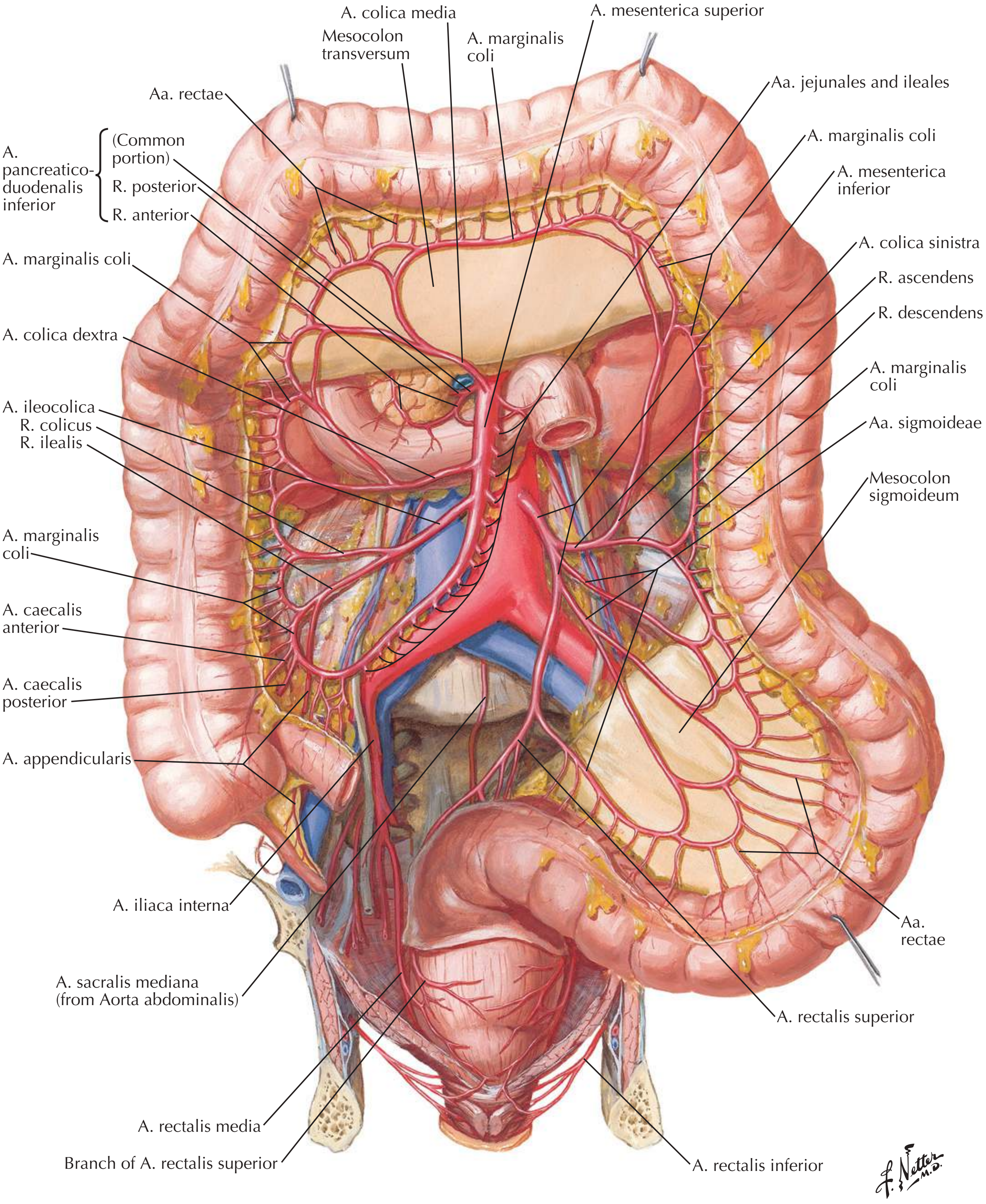

Ductus choledochus
A. gastroduodenalis
A. pancreaticoduodenalis superior posterior
A. pancreaticoduodenalis superior anterior (*phantom*)
A. mesenterica superior
A. pancreaticoduodenalis inferior
R. posterior a. pancreaticoduodenalis inferioris
R. anterior a. pancreaticoduodenalis inferioris (*partially in phantom*)
V. cava inferior


Truncus coeliacus
A. splenica
A. hepatica propria
A. hepatica communis
A. supraduodenalis
A. gastroduodenalis (*partially in phantom*)
A. pancreaticoduodenalis superior posterior
Ductus choledochus
A. gastroomentalis dextra (A. gastroepiploica dextra) (*phantom, cut*)
A. pancreaticoduodenalis superior anterior (*phantom*)
Vas anastomoticum
R. posterior a. pancreaticoduodenalis inferioris
R. anterior a. pancreaticoduodenalis inferioris (*phantom*)
A. pancreatica magna
A. pancreatica inferior
A. pancreatica dorsalis
A. mesenterica superior
A. pancreaticoduodenalis inferior
F. Netter M.D.

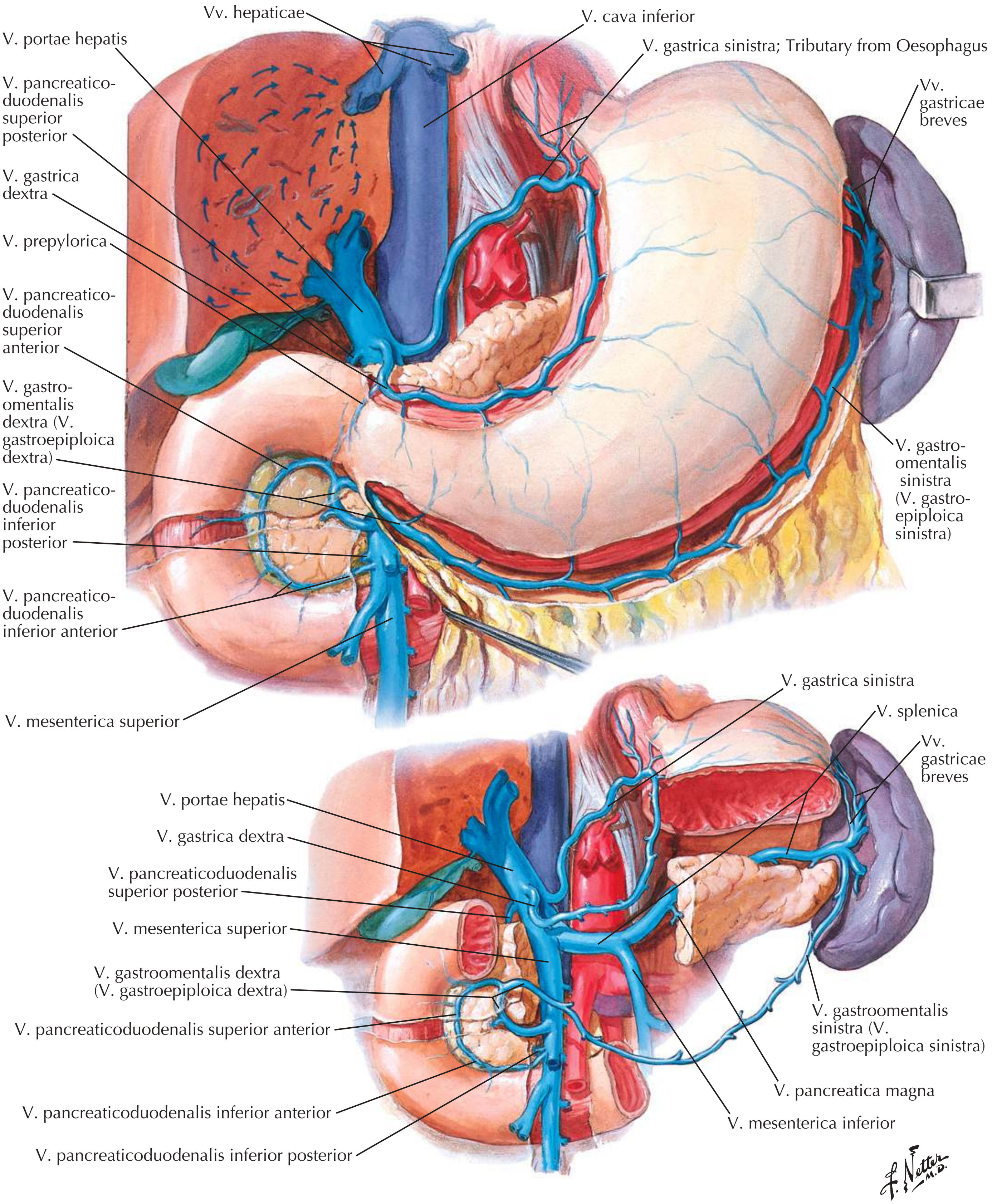
Posterior view

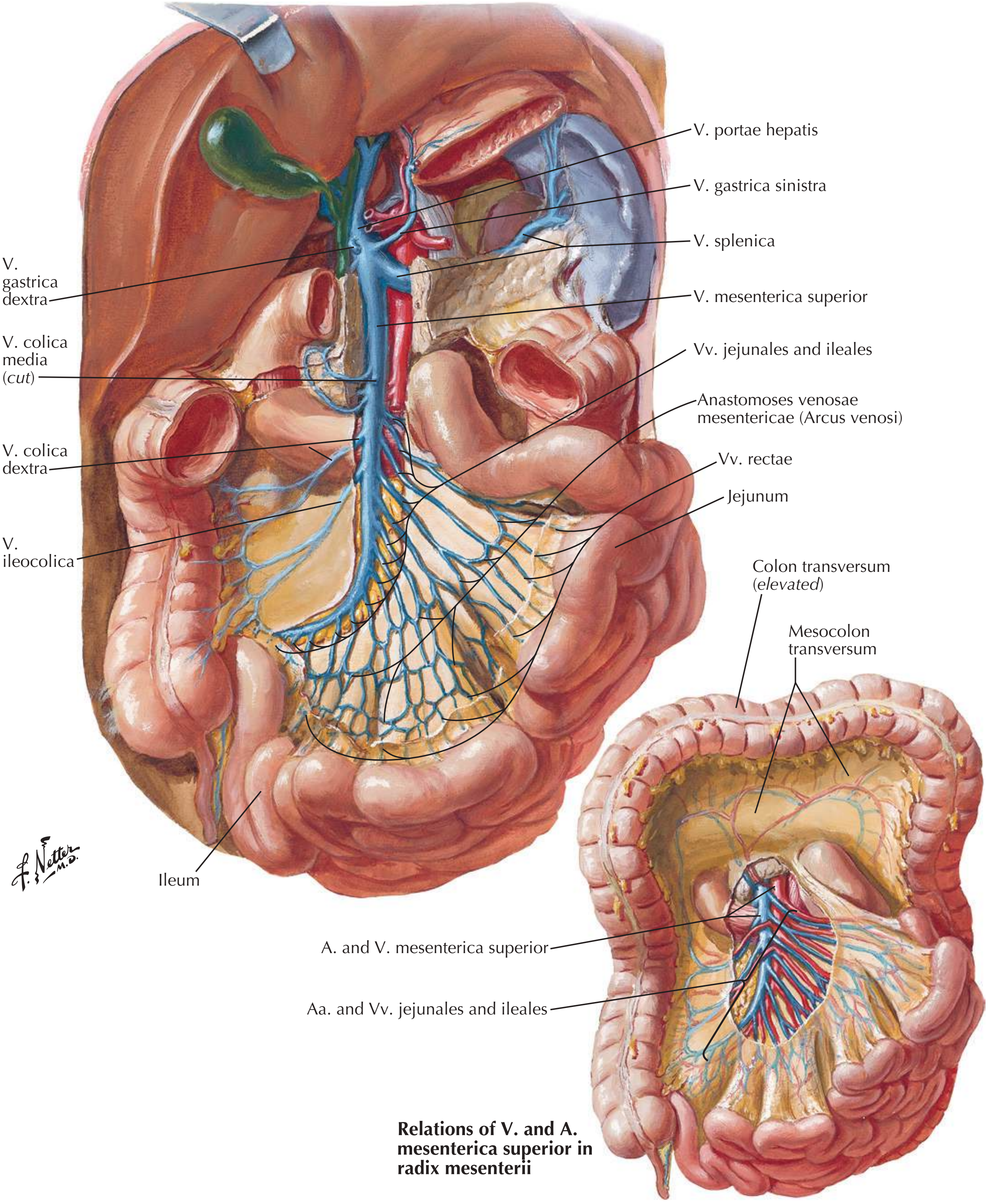
Arteries of Small Intestine


A. hepatica communis
A. supraduodenalis
A. gastroduodenalis
A. pancreaticoduodenalis superior posterior
A. gastroomentalis dextra (A. gastroepiploica dextra)
A. pancreaticoduodenalis superior anterior
A pancreatico-duodenalis inferior
(Common portion)
R. posterior
R. anterior
Truncus coeliacus
A. and V. splenica
A. pancreatica dorsalis
A. pancreatica inferior
A. and V. mesenterica superior
A. colica media (*cut*)
A. colica dextra
A. ileocolica
A. mesenterica superior
A. caecalis anterior
A. caecalis posterior
A. appendicularis
Aa. jejunales; Aa. ileales
Anastomoses arteriosae mesentericae (Arcus arteriosi)
Aa. rectae
F. Netter M.D.


A. colica media
Mesocolon transversum
A. marginalis coli
A. mesenterica superior
Aa. jejunales and ileales
Aa. rectae
A. marginalis coli
A. mesenterica inferior
A. pancreaticoduodenalis inferior
(Common portion)
R. posterior
R. anterior
A. colica sinistra
R. ascendens
R. descendens
A. marginalis coli
A. colica dextra
A. marginalis coli
A. ileocolica
R. colicus
R. ilealis
Aa. sigmoideae
Mesocolon sigmoideum
A. marginalis coli
A. caecalis anterior
A. caecalis posterior
A. appendicularis
A. iliaca interna
Aa. rectae
A. sacralis mediana (from Aorta abdominalis)
A. rectalis superior
A. rectalis media
Branch of A. rectalis superior
A. rectalis inferior
F. Netter M.D.

Veins of Stomach, Duodenum, Pancreas, and Spleen

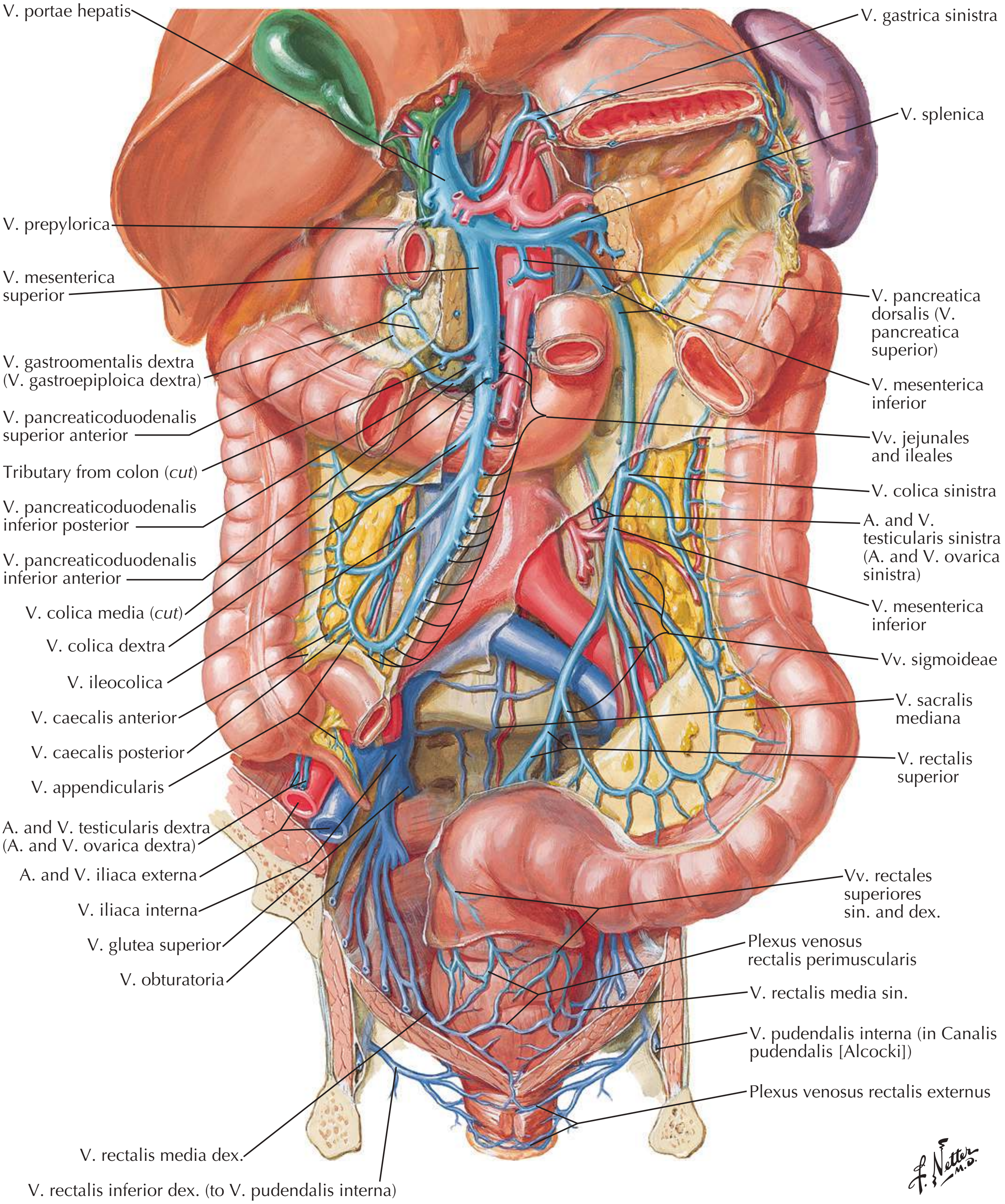

Vv. hepaticae
V. cava inferior
V. portae hepatis
V. gastrica sinistra; Tributary from Oesophagus
V. pancreaticoduodenalis superior posterior
Vv. gastricae breves
V. gastrica dextra
V. prepylorica
V. pancreaticoduodenalis superior anterior
V. gastroomentalis dextra (V. gastroepiploica dextra)
V. gastroomentalis sinistra (V. gastroepiploica sinistra)
V. pancreaticoduodenalis inferior posterior
V. pancreaticoduodenalis inferior anterior
V. mesenterica superior
V. gastrica sinistra
V. splenica
V. portae hepatis
Vv. gastricae breves
V. gastrica dextra
V. pancreaticoduodenalis superior posterior
V. mesenterica superior
V. gastroomentalis dextra (V. gastroepiploica dextra)
V. pancreaticoduodenalis superior anterior
V. gastroomentalis sinistra (V. gastroepiploica sinistra)
V. pancreatica magna
V. pancreaticoduodenalis inferior anterior
V. mesenterica inferior
V. pancreaticoduodenalis inferior posterior
F. Netter M.D.


V. portae hepatis
V. gastrica sinistra
V. splenica
V. mesenterica superior
Vv. jejunales and ileales
Anastomoses venosae mesentericae (Arcus venosi)
Vv. rectae
Jejunum
V. gastrica dextra
V. colica media (*cut*)
V. colica dextra
V. ileocolica
Ileum
Colon transversum (*elevated*)
Mesocolon transversum
A. and V. mesenterica superior
Aa. and Vv. jejunales and ileales

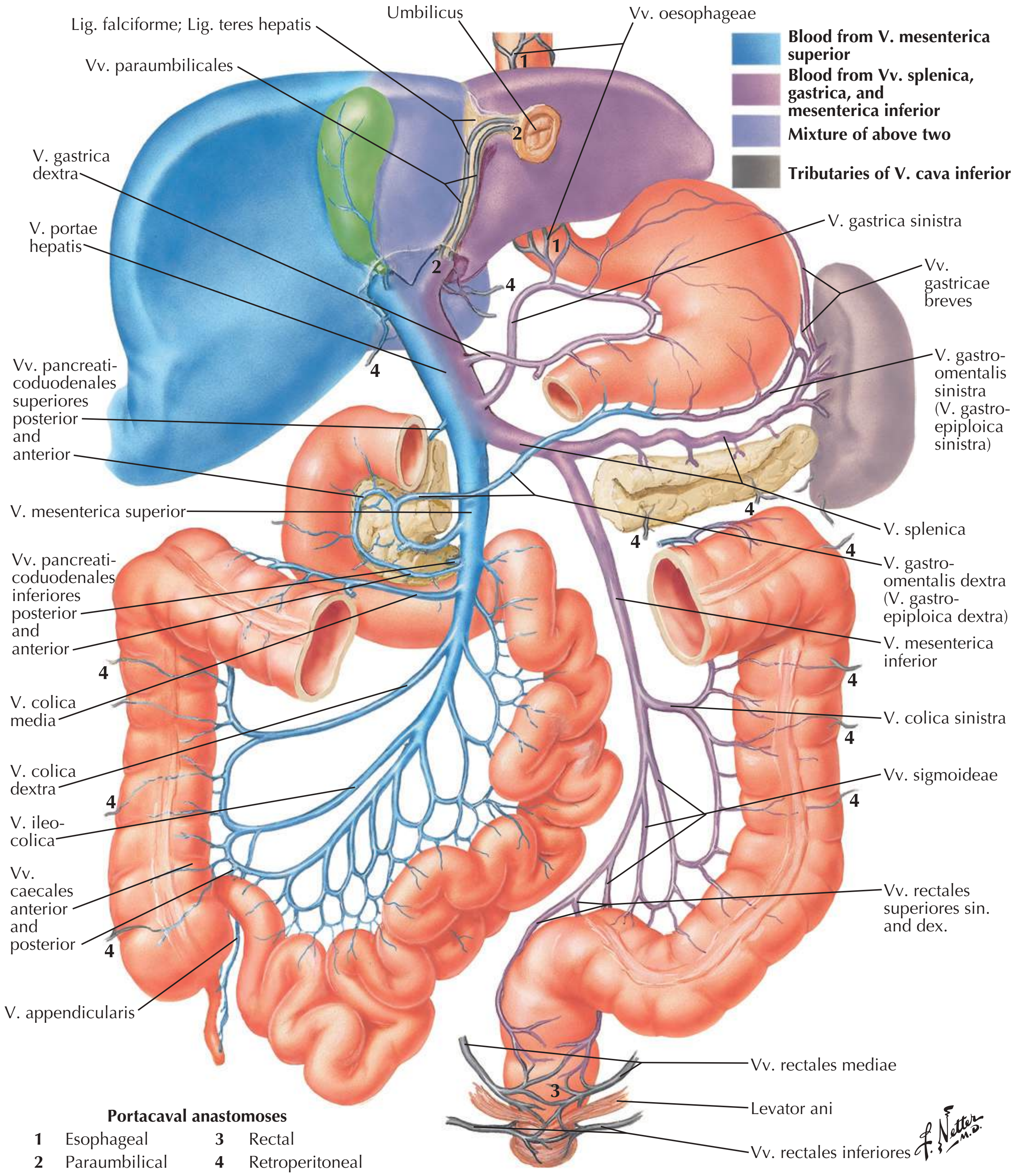
Relations of V. and A. mesenterica superior in radix mesenterii

Veins of Large Intestine

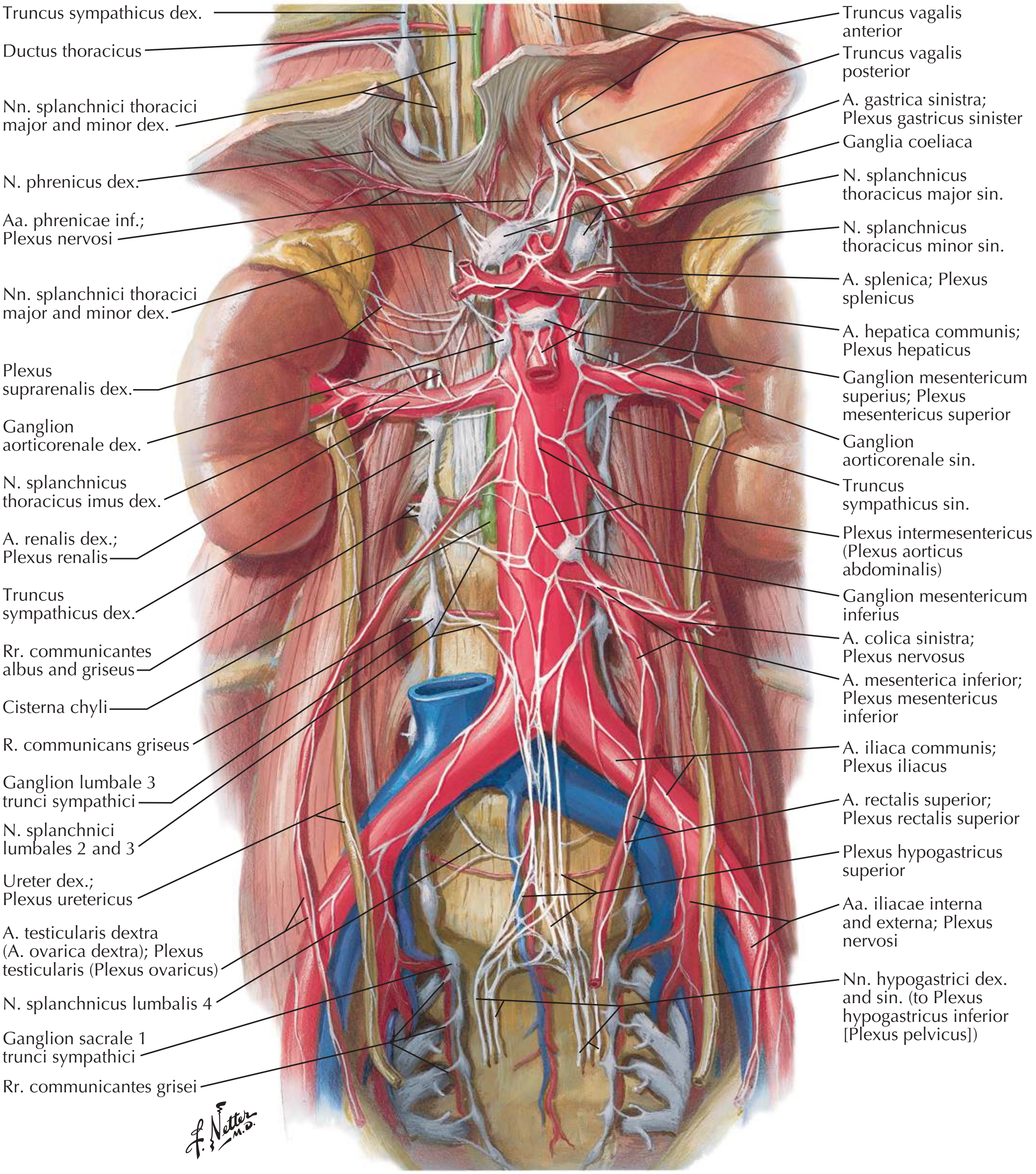
See also **Plate 381**



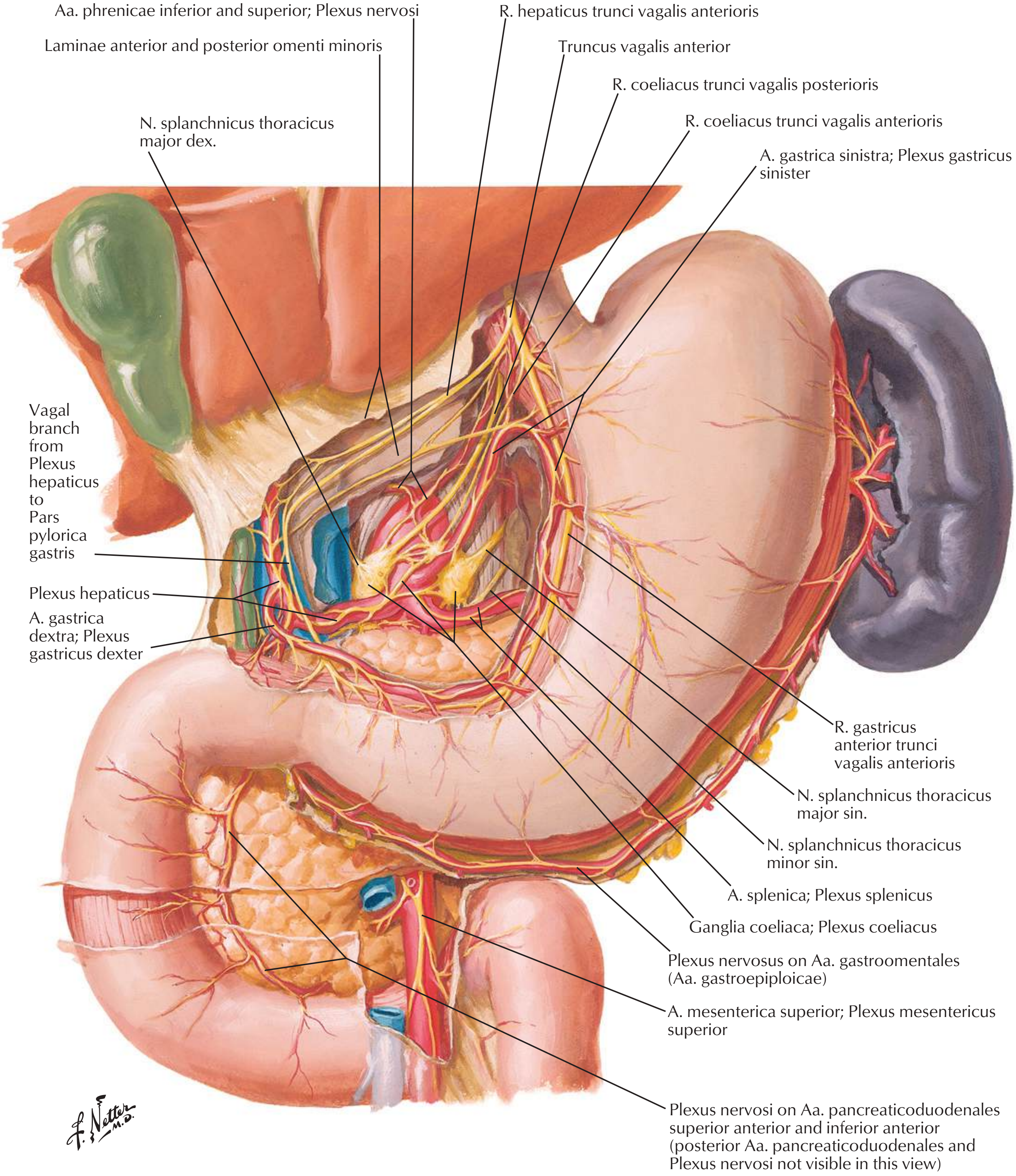
V. portae hepatis
V. prepylorica
V. mesenterica superior
V. gastroomentalis dextra (V. gastroepiploica dextra)
V. pancreaticoduodenalis superior anterior
Tributary from colon (*cut*)
V. pancreaticoduodenalis inferior posterior
V. pancreaticoduodenalis inferior anterior
V. colica media (*cut*)
V. colica dextra
V. ileocolica
V. caecalis anterior
V. caecalis posterior
V. appendicularis
A. and V. testicularis dextra (A. and V. ovarica dextra)
A. and V. iliaca externa
V. iliaca interna
V. glutea superior
V. obturatoria
V. rectalis media dex.
V. rectalis inferior dex. (to V. pudendalis interna)
V. gastrica sinistra
V. splenica
V. pancreatica dorsalis (V. pancreatica superior)
V. mesenterica inferior
Vv. jejunales and ileales
V. colica sinistra
A. and V. testicularis sinistra (A. and V. ovarica sinistra)
V. mesenterica inferior
Vv. sigmoideae
V. sacralis mediana
V. rectalis superior
Vv. rectales superiores sin. and dex.
Plexus venosus rectalis perimuscularis
V. rectalis media sin.
V. pudendalis interna (in Canalis pudendalis [Alcocki])
Plexus venosus rectalis externus
F. Netter M.D.


Umbilicus
Vv. oesophageae
Lig. falciforme; Lig. teres hepatis
Vv. paraumbilicales
V. gastrica dextra
V. portae hepatis
Vv. pancreaticoduodenales superiores posterior and anterior
V. mesenterica superior
Vv. pancreaticoduodenales inferiores posterior and anterior
V. colica media
V. colica dextra
V. ileocolica
Vv. caecales anterior and posterior
V. appendicularis
🟦 Blood from V. mesenterica superior
🟪 Blood from Vv. splenica, gastrica, and mesenterica inferior
🟦 Mixture of above two
⬛ Tributaries of V. cava inferior
V. gastrica sinistra
Vv. gastricae breves
V. gastro-omentalis sinistra (V. gastro-epiploica sinistra)
V. splenica
V. gastro-omentalis dextra (V. gastro-epiploica dextra)
V. mesenterica inferior
V. colica sinistra
Vv. sigmoideae
Vv. rectales superiores sin. and dex.
Vv. rectales mediae
Levator ani
Vv. rectales inferiores
1
2
3
4
F. Netter M.D.
Portacaval anastomoses
1 Esophageal
2 Paraumbilical
3 Rectal
4 Retroperitoneal

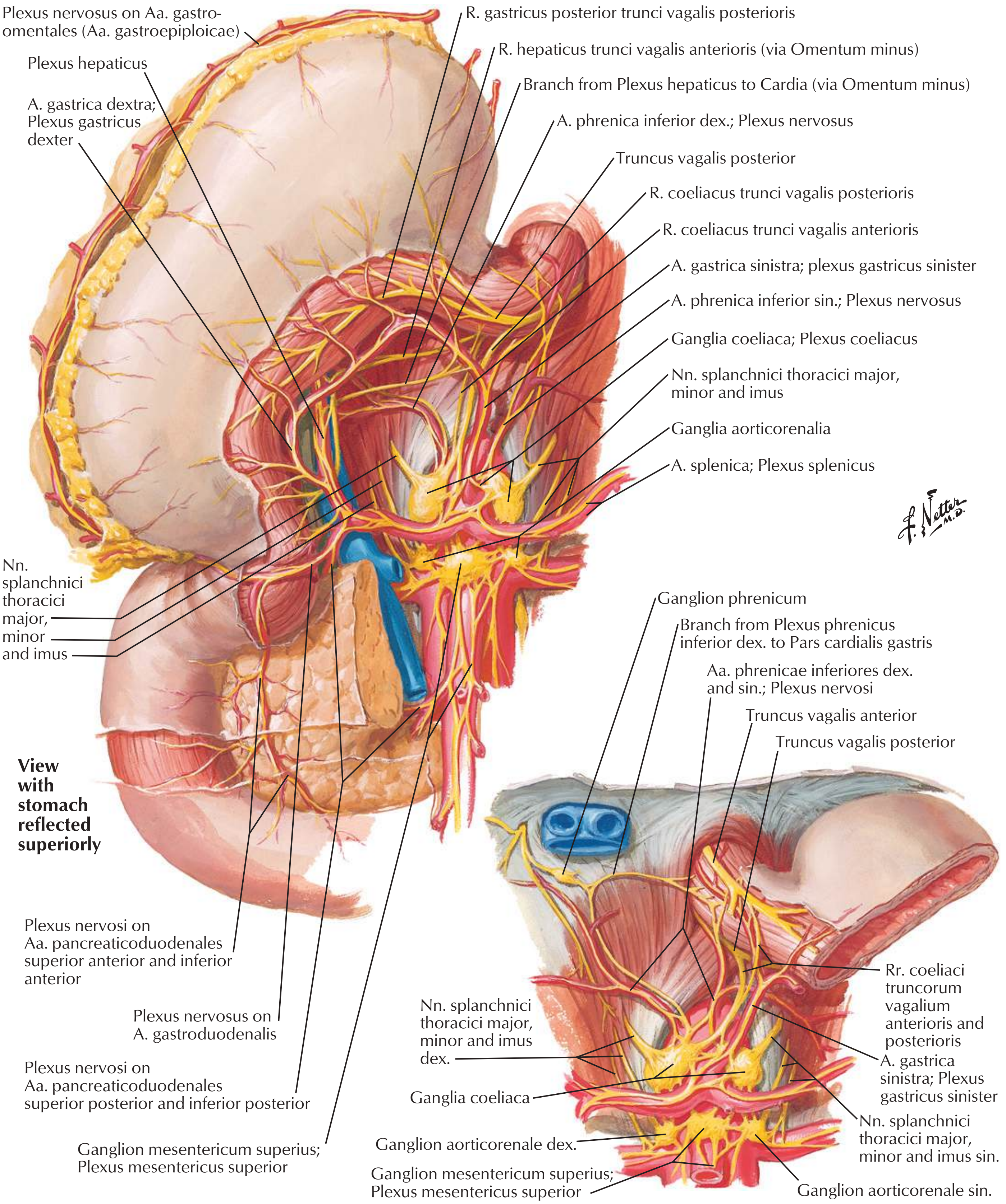
See also Plate 305


Truncus sympathicus dex.
Ductus thoracicus
Nn. splanchnici thoracici major and minor dex.
N. phrenicus dex.
Aa. phrenicae inf.; Plexus nervosi
Nn. splanchnici thoracici major and minor dex.
Plexus suprarenalis dex.
Ganglion aorticorenale dex.
N. splanchnicus thoracicus imus dex.
A. renalis dex.; Plexus renalis
Truncus sympathicus dex.
Rr. communicantes albus and griseus
Cisterna chyli
R. communicans griseus
Ganglion lumbale 3 trunci sympathici
N. splanchnici lumbales 2 and 3
Ureter dex.; Plexus uretericus
A. testicularis dextra (A. ovarica dextra); Plexus testicularis (Plexus ovaricus)
N. splanchnicus lumbalis 4
Ganglion sacrale 1 trunci sympathici
Rr. communicantes grisei
Truncus vagalis anterior
Truncus vagalis posterior
A. gastrica sinistra; Plexus gastricus sinister
Ganglia coeliaca
N. splanchnicus thoracicus major sin.
N. splanchnicus thoracicus minor sin.
A. splenica; Plexus splenicus
A. hepatica communis; Plexus hepaticus
Ganglion mesentericum superius; Plexus mesentericus superior
Ganglion aorticorenale sin.
Truncus sympathicus sin.
Plexus intermesentericus (Plexus aorticus abdominalis)
Ganglion mesentericum inferius
A. colica sinistra; Plexus nervosus
A. mesenterica inferior; Plexus mesentericus inferior
A. iliaca communis; Plexus iliacus
A. rectalis superior; Plexus rectalis superior
Plexus hypogastricus superior
Aa. iliacae interna and externa; Plexus nervosi
Nn. hypogastrici dex. and sin. (to Plexus hypogastricus inferior [Plexus pelvicus])
F. Netter M.D.

See also **Plate 243**

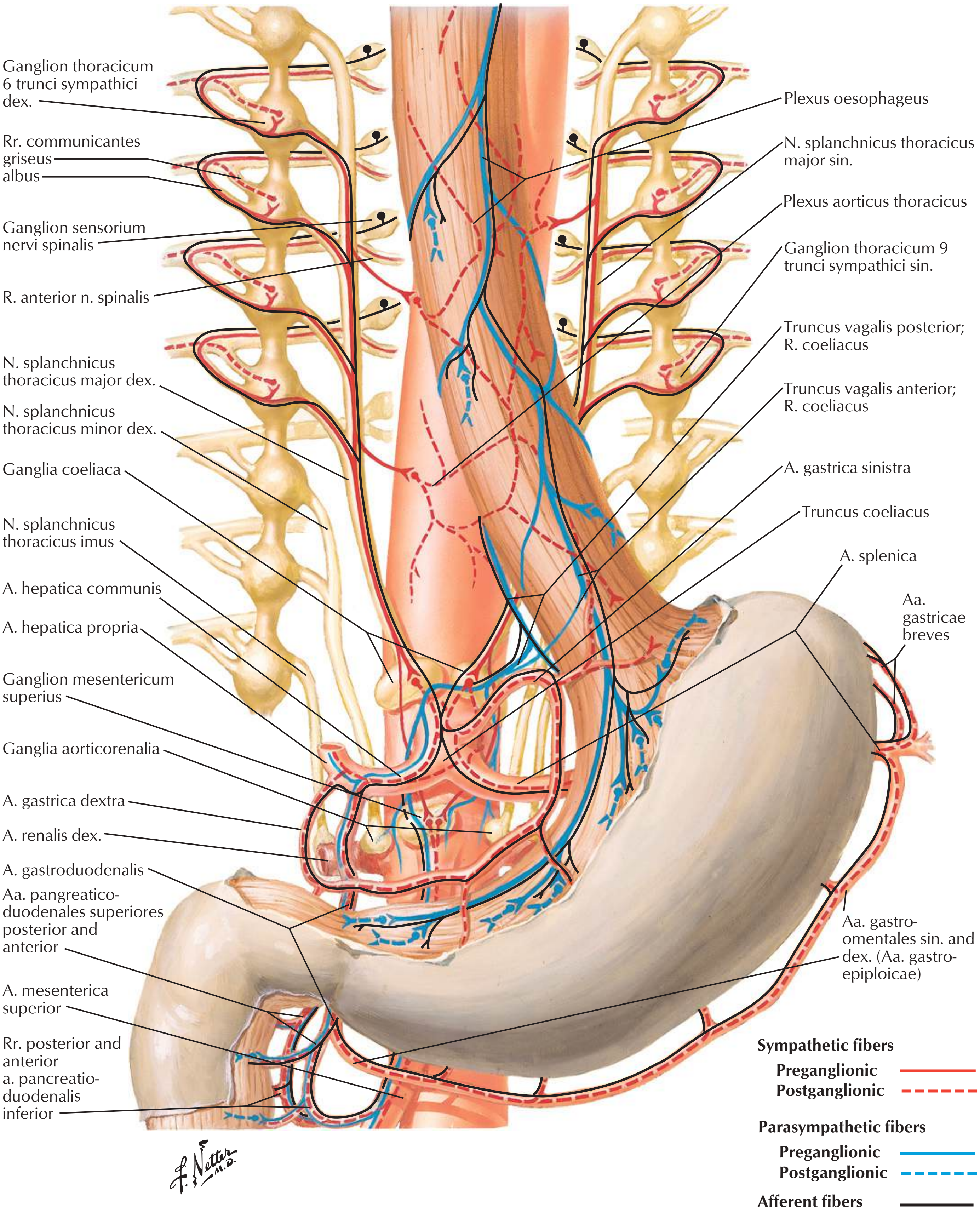

Aa. phrenicae inferior and superior; Plexus nervosi
Laminae anterior and posterior omenti minoris
N. splanchnicus thoracicus major dex.
R. hepaticus trunci vagalis anterioris
Truncus vagalis anterior
R. coeliacus trunci vagalis posterioris
R. coeliacus trunci vagalis anterioris
A. gastrica sinistra; Plexus gastricus sinister
Vagal branch from Plexus hepaticus to Pars pylorica gastris
Plexus hepaticus
A. gastrica dextra; Plexus gastricus dexter
R. gastricus anterior trunci vagalis anterioris
N. splanchnicus thoracicus major sin.
N. splanchnicus thoracicus minor sin.
A. splenica; Plexus splenicus
Ganglia coeliaca; Plexus coeliacus
Plexus nervosus on Aa. gastroomentales (Aa. gastroepiploicae)
A. mesenterica superior; Plexus mesentericus superior
Plexus nervosi on Aa. pancreaticoduodenales superior anterior and inferior anterior (posterior Aa. pancreaticoduodenales and Plexus nervosi not visible in this view)
F. Netter M.D.

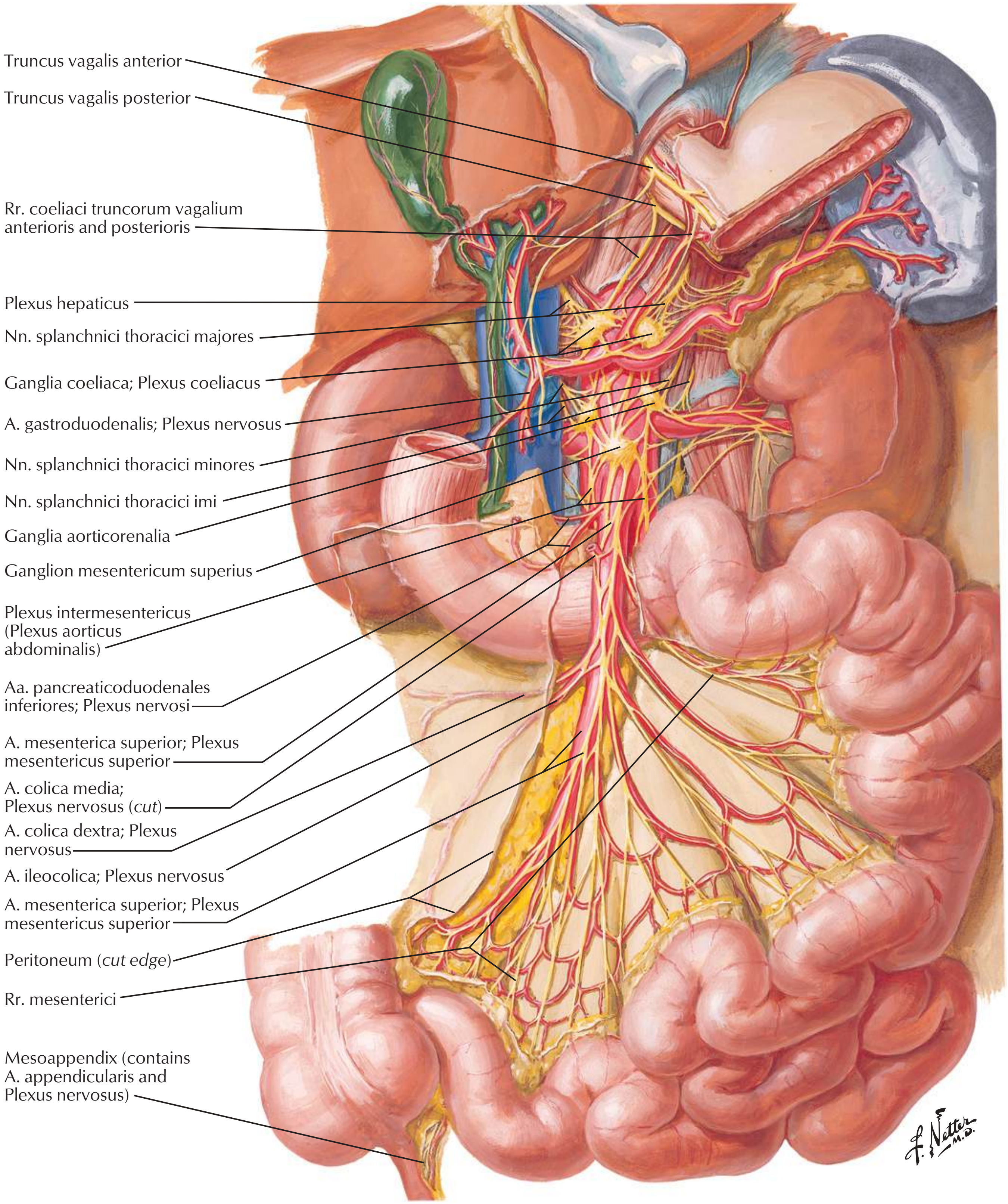
Autonomic Innervation of Stomach and Duodenum (continued)


Plexus nervosus on Aa. gastro-omentales (Aa. gastroepiploicae)
Plexus hepaticus
A. gastrica dextra; Plexus gastricus dexter
R. gastricus posterior trunci vagalis posterioris
R. hepaticus trunci vagalis anterioris (via Omentum minus)
Branch from Plexus hepaticus to Cardia (via Omentum minus)
A. phrenica inferior dex.; Plexus nervosus
Truncus vagalis posterior
R. coeliacus trunci vagalis posterioris
R. coeliacus trunci vagalis anterioris
A. gastrica sinistra; plexus gastricus sinister
A. phrenica inferior sin.; Plexus nervosus
Ganglia coeliaca; Plexus coeliacus
Nn. splanchnici thoracici major, minor and imus
Ganglia aorticorenalia
A. splenica; Plexus splenicus
F. Netter M.D.
Nn. splanchnici thoracici major, minor and imus
View with stomach reflected superiorly
Plexus nervosi on Aa. pancreaticoduodenales superior anterior and inferior anterior
Plexus nervosus on A. gastroduodenalis
Plexus nervosi on Aa. pancreaticoduodenales superior posterior and inferior posterior
Ganglion mesentericum superius; Plexus mesentericus superior
Ganglion phrenicum
Branch from Plexus phrenicus inferior dex. to Pars cardialis gastris
Aa. phrenicae inferiores dex. and sin.; Plexus nervosi
Truncus vagalis anterior
Truncus vagalis posterior
Rr. coeliaci truncorum vagalium anterioris and posterioris
Nn. splanchnici thoracici major, minor and imus dex.
A. gastrica sinistra; Plexus gastricus sinister
Ganglia coeliaca
Nn. splanchnici thoracici major, minor and imus sin.
Ganglion aorticorenale dex.
Ganglion mesentericum superius; Plexus mesentericus superior
Ganglion aorticorenale sin.

Autonomic Innervation of Esophagus, Stomach, and Duodenum: Schema

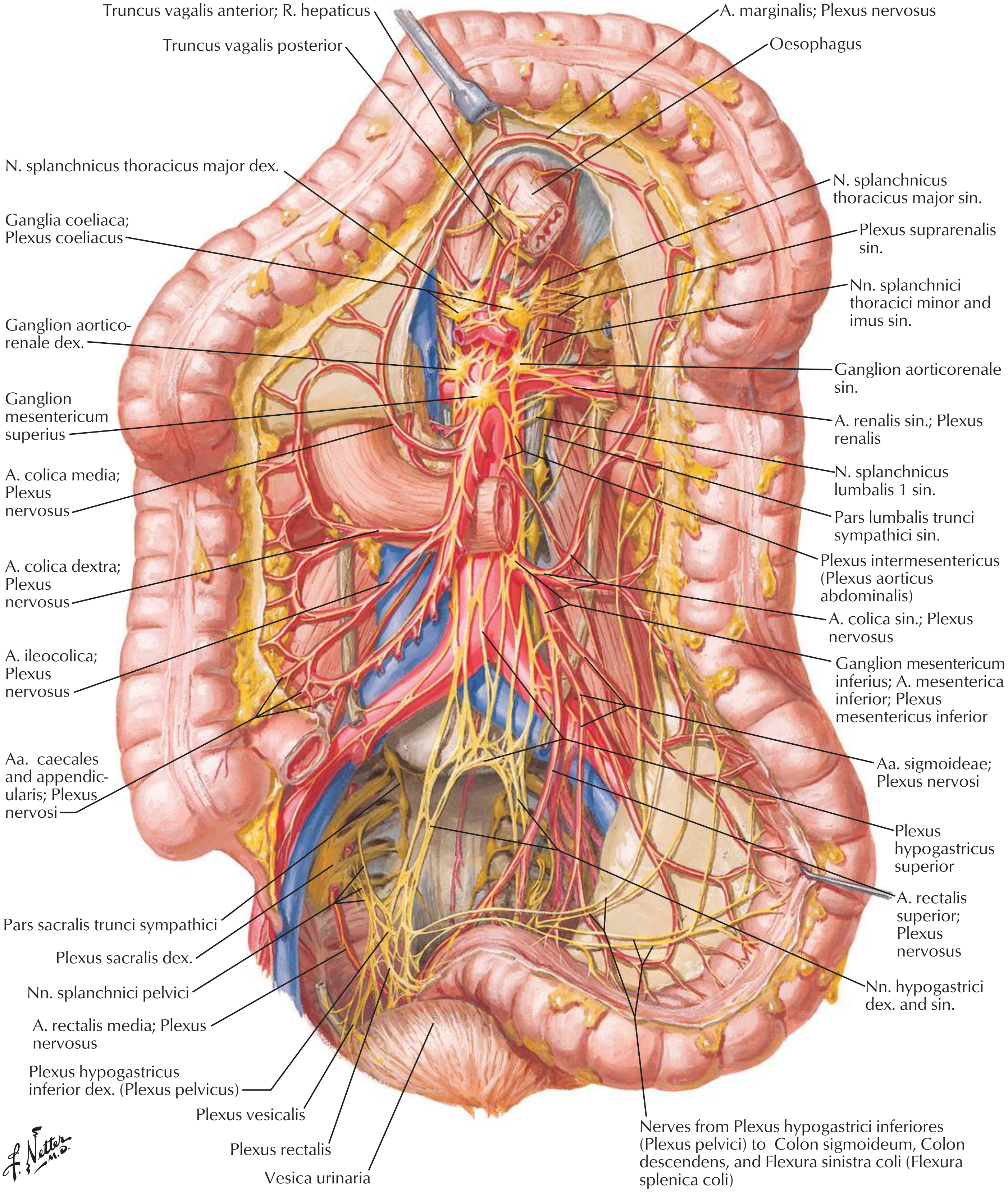
See also Plates 172, 173


Ganglion thoracicum 6 trunci sympathici dex.
Rr. communicantes
griseus
albus
Ganglion sensorium nervi spinalis
R. anterior n. spinalis
N. splanchnicus thoracicus major dex.
N. splanchnicus thoracicus minor dex.
Ganglia coeliaca
N. splanchnicus thoracicus imus
A. hepatica communis
A. hepatica propria
Ganglion mesentericum superius
Ganglia aorticorenalia
A. gastrica dextra
A. renalis dex.
A. gastroduodenalis
Aa. pangreatico-duodenales superiores posterior and anterior
A. mesenterica superior
Rr. posterior and anterior a. pancreatio-duodenalis inferior
Plexus oesophageus
N. splanchnicus thoracicus major sin.
Plexus aorticus thoracicus
Ganglion thoracicum 9 trunci sympathici sin.
Truncus vagalis posterior; R. coeliacus
Truncus vagalis anterior; R. coeliacus
A. gastrica sinistra
Truncus coeliacus
A. splenica
Aa. gastricae breves
Aa. gastro-omentales sin. and dex. (Aa. gastro-epiploicae)
Sympathetic fibers
Preganglionic
Postganglionic
Parasympathetic fibers
Preganglionic
Postganglionic
Afferent fibers
F. Netter M.D.


Truncus vagalis anterior
Truncus vagalis posterior
Rr. coeliaci truncorum vagalium anterioris and posterioris
Plexus hepaticus
Nn. splanchnici thoracici majores
Ganglia coeliaca; Plexus coeliacus
A. gastroduodenalis; Plexus nervosus
Nn. splanchnici thoracici minores
Nn. splanchnici thoracici imi
Ganglia aorticorenalia
Ganglion mesentericum superius
Plexus intermesentericus (Plexus aorticus abdominalis)
Aa. pancreaticoduodenales inferiores; Plexus nervosi
A. mesenterica superior; Plexus mesentericus superior
A. colica media; Plexus nervosus (*cut*)
A. colica dextra; Plexus nervosus
A. ileocolica; Plexus nervosus
A. mesenterica superior; Plexus mesentericus superior
Peritoneum (*cut edge*)
Rr. mesenterici
Mesoappendix (contains A. appendicularis and Plexus nervosus)
F. Netter M.D.

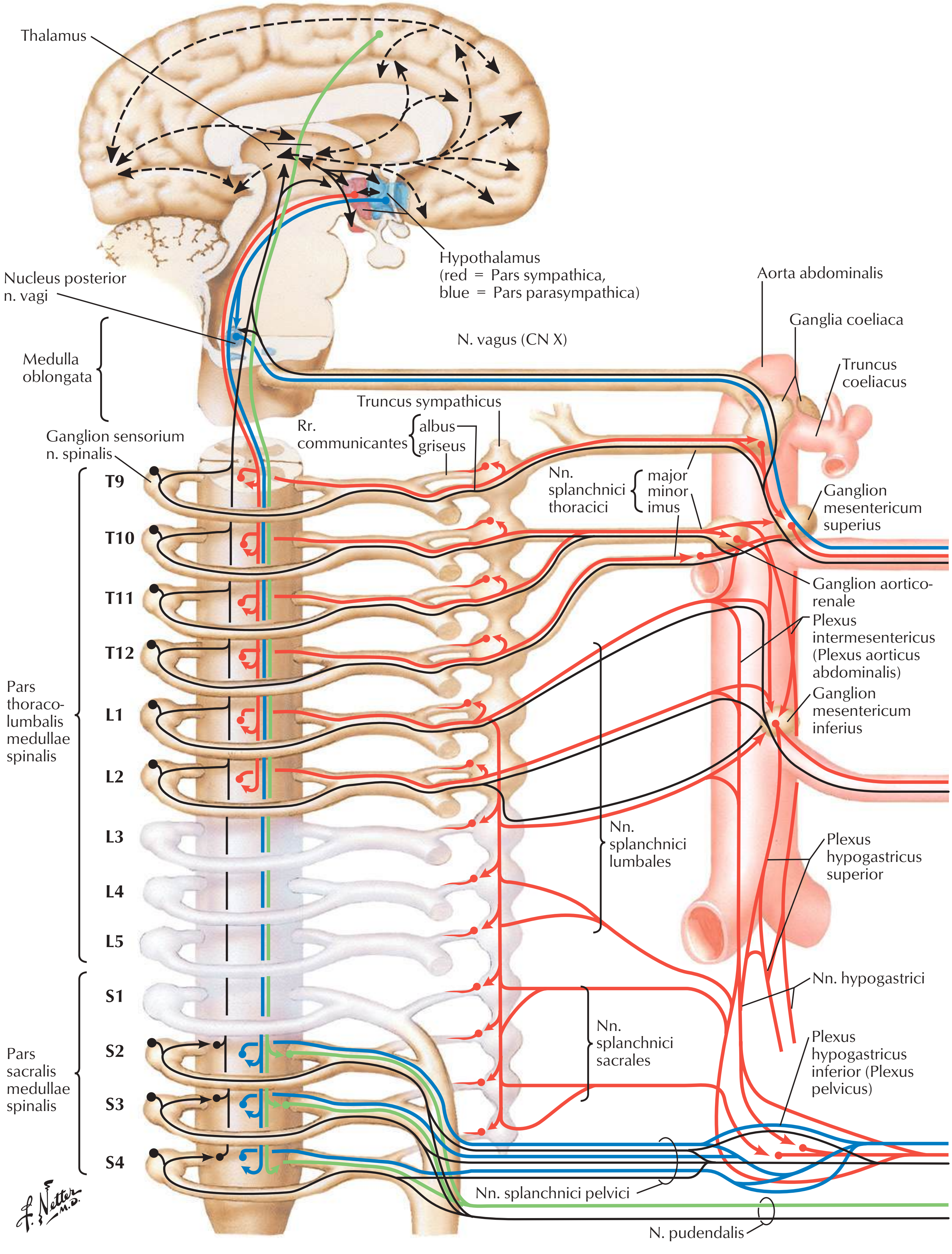
Autonomic Innervation of Large Intestine

See also Plates 392, 393, 394


Truncus vagalis anterior; R. hepaticus
Truncus vagalis posterior
N. splanchnicus thoracicus major dex.
Ganglia coeliaca; Plexus coeliacus
Ganglion aortico-renale dex.
Ganglion mesentericum superius
A. colica media; Plexus nervosus
A. colica dextra; Plexus nervosus
A. ileocolica; Plexus nervosus
Aa. caecales and appendicularis; Plexus nervosi
Pars sacralis trunci sympathici
Plexus sacralis dex.
Nn. splanchnici pelvici
A. rectalis media; Plexus nervosus
Plexus hypogastricus inferior dex. (Plexus pelvicus)
Plexus vesicalis
Plexus rectalis
Vesica urinaria
A. marginalis; Plexus nervosus
Oesophagus
N. splanchnicus thoracicus major sin.
Plexus suprarenalis sin.
Nn. splanchnici thoracici minor and imus sin.
Ganglion aorticorenale sin.
A. renalis sin.; Plexus renalis
N. splanchnicus lumbalis 1 sin.
Pars lumbalis trunci sympathici sin.
Plexus intermesentericus (Plexus aorticus abdominalis)
A. colica sin.; Plexus nervosus
Ganglion mesentericum inferius; A. mesenterica inferior; Plexus mesentericus inferior
Aa. sigmoideae; Plexus nervosi
Plexus hypogastricus superior
A. rectalis superior; Plexus nervosus
Nn. hypogastrici dex. and sin.
Nerves from Plexus hypogastrici inferiores (Plexus pelvici) to Colon sigmoideum, Colon descendens, and Flexura sinistra coli (Flexura splenica coli)
F. Netter M.D.

Autonomic Innervation of Intestines: Schema

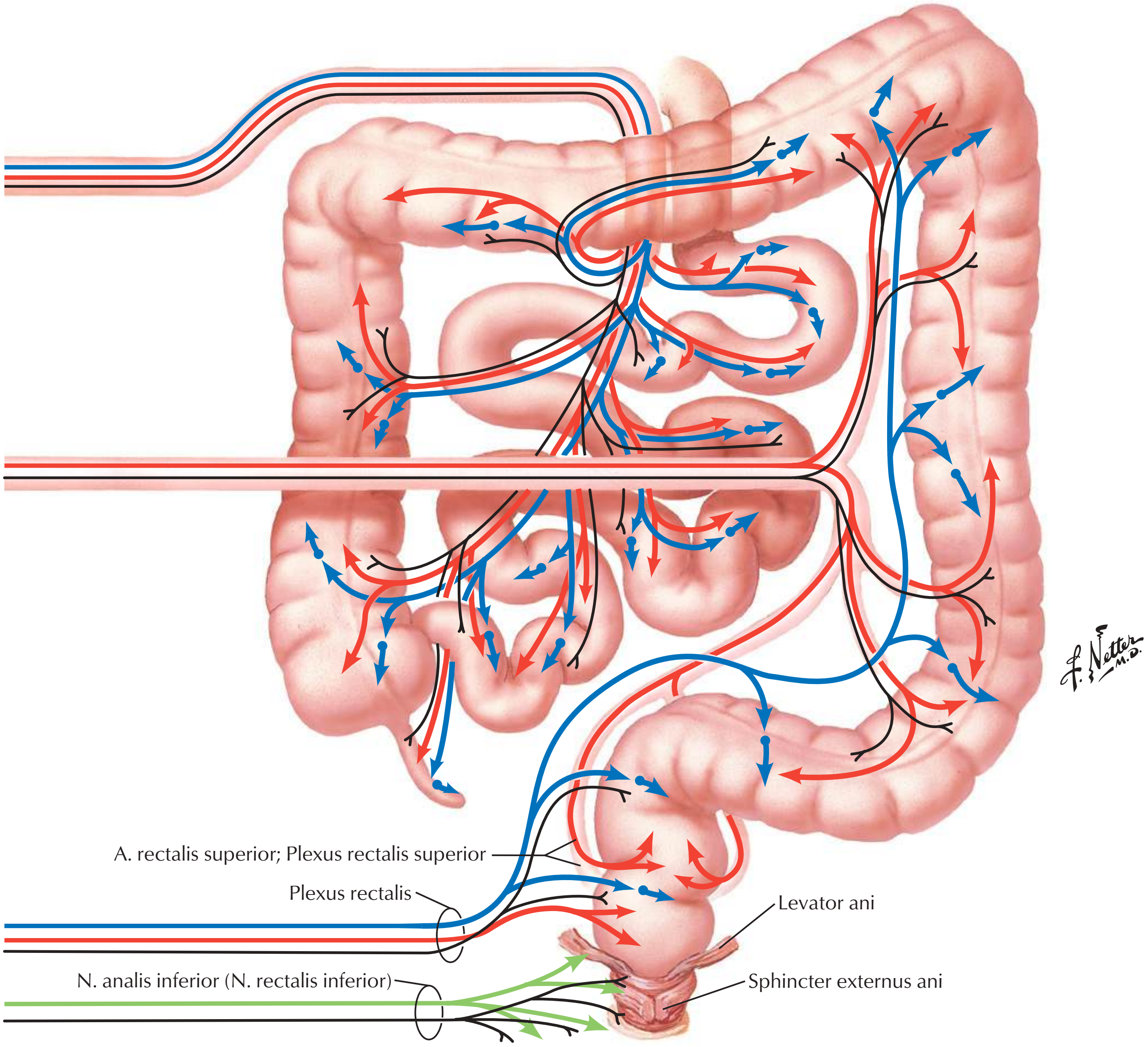
See also Plates 172, 173

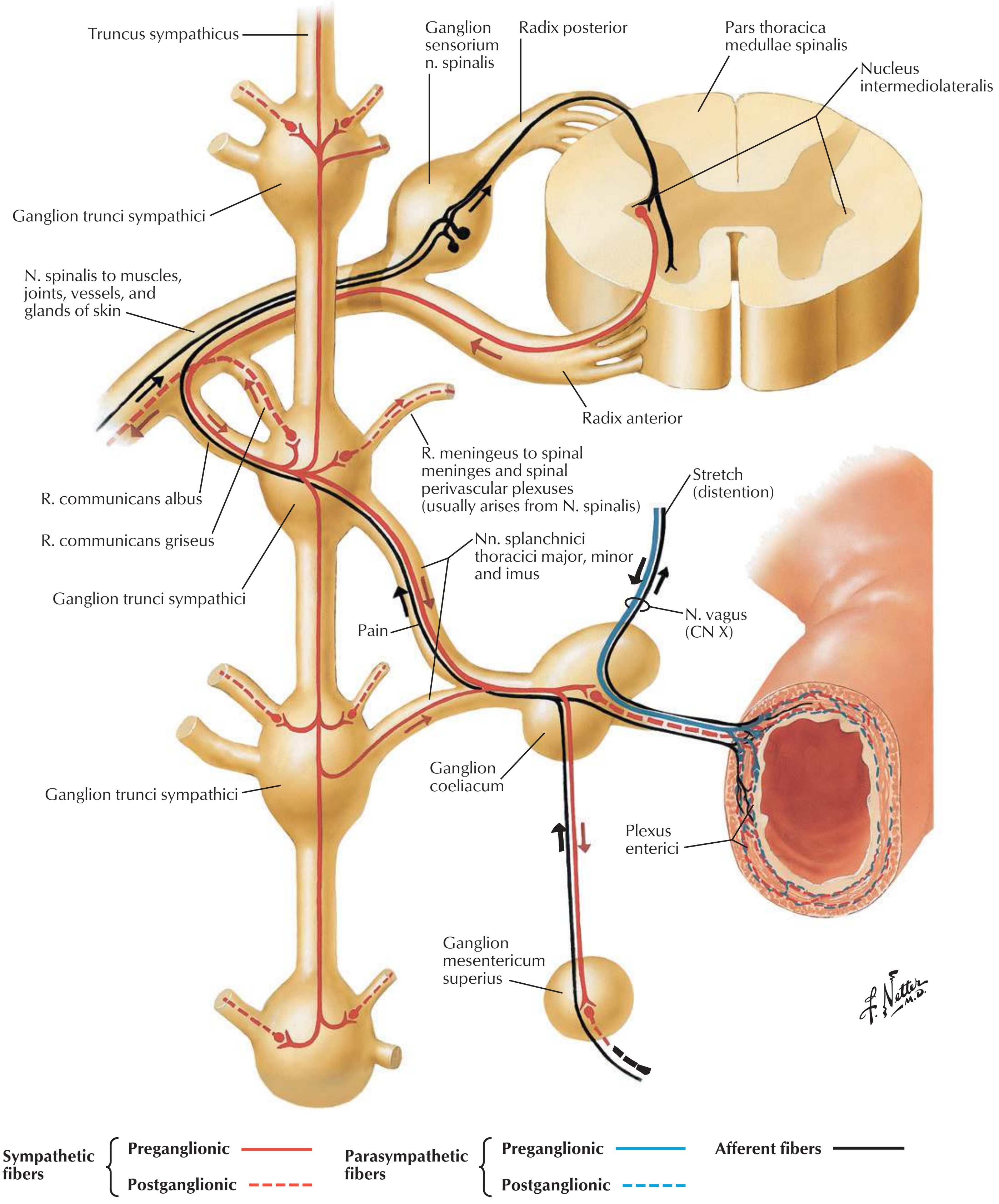

Thalamus
Hypothalamus
(red = Pars sympathica,
blue = Pars parasympathica)
Nucleus posterior
n. vagi
Medulla
oblongata
N. vagus (CN X)
Aorta abdominalis
Ganglia coeliaca
Truncus
coeliacus
Truncus sympathicus
Rr.
communicantes
albus
griseus
Ganglion sensorium
n. spinalis
T9
T10
T11
T12
L1
L2
L3
L4
L5
S1
S2
S3
S4
Nn.
splanchnici
thoracici
major
minor
imus
Ganglion
mesentericum
superius
Ganglion aortico-
renale
Plexus
intermesentericus
(Plexus aorticus
abdominalis)
Ganglion
mesentericum
inferius
Pars
thoraco-
lumbalis
medullae
spinalis
Nn.
splanchnici
lumbales
Plexus
hypogastricus
superior
Nn. hypogastrici
Pars
sacralis
medullae
spinalis
Nn.
splanchnici
sacrales
Plexus
hypogastricus
inferior (Plexus
pelvicus)
Nn. splanchnici pelvici
N. pudendalis
F. Netter M.D.

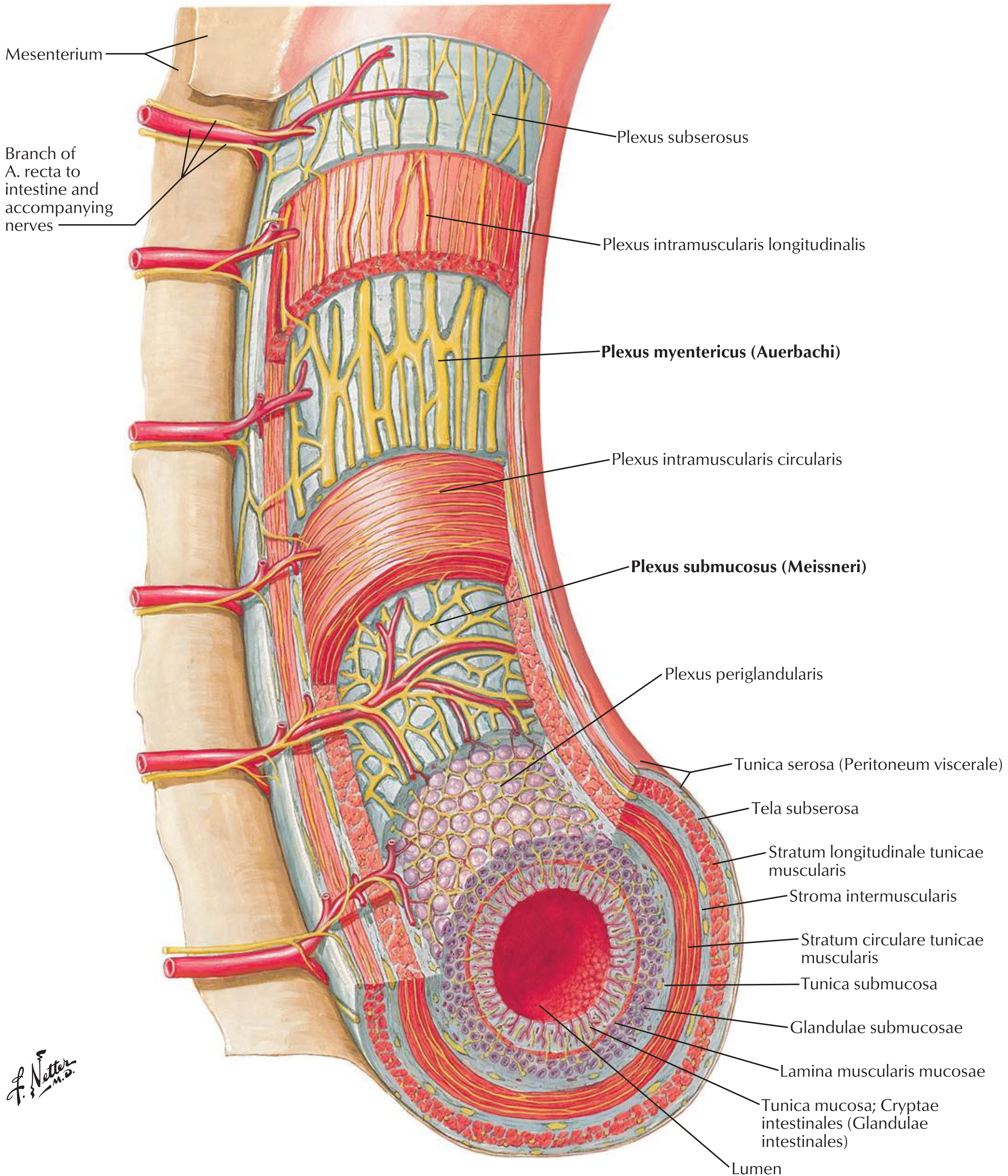
Autonomic Innervation of Intestines: Schema (continued)

See also **Plates 172, 173**

Sympathetic efferents —
Parasympathetic efferents —
Somatic efferents —
Afferents and CNS connections —
Indefinite paths - - - -


A. rectalis superior; Plexus rectalis superior
Plexus rectalis
Levator ani
N. analis inferior (N. rectalis inferior)
Sphincter externus ani
F. Netter M.D.

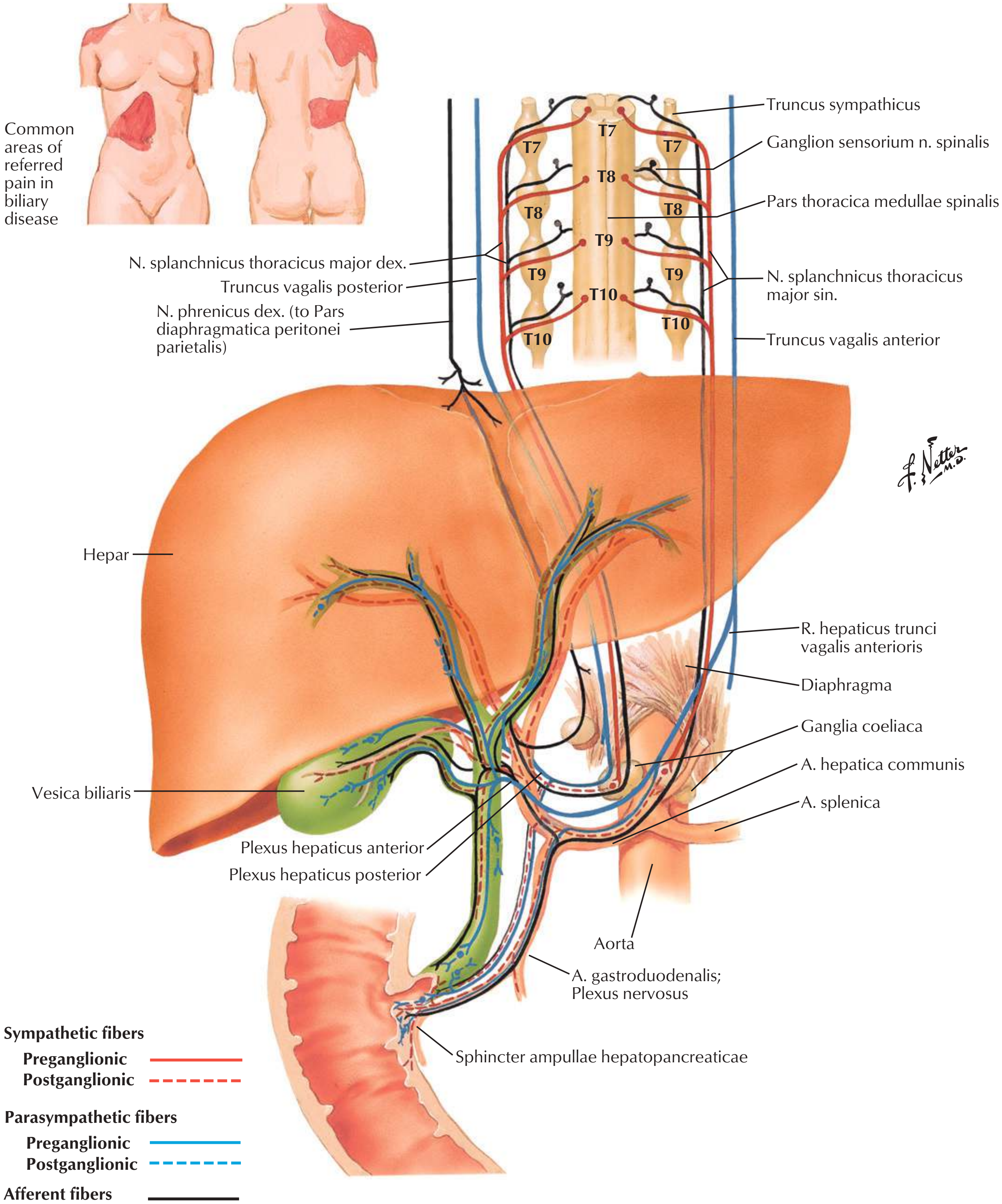

Truncus sympathicus
Ganglion sensorium n. spinalis
Radix posterior
Pars thoracica medullae spinalis
Nucleus intermediolateralis
Ganglion trunci sympathici
N. spinalis to muscles, joints, vessels, and glands of skin
Radix anterior
R. meningeus to spinal meninges and spinal perivascular plexuses (usually arises from N. spinalis)
Stretch (distention)
R. communicans albus
R. communicans griseus
Nn. splanchnici thoracici major, minor and imus
Ganglion trunci sympathici
N. vagus (CN X)
Pain
Ganglion coeliacum
Ganglion trunci sympathici
Plexus enterici
Ganglion mesentericum superius
Sympathetic fibers
Preganglionic
Postganglionic
Parasympathetic fibers
Preganglionic
Postganglionic
Afferent fibers


Mesenterium
Branch of A. recta to intestine and accompanying nerves
Plexus subserosus
Plexus intramuscularis longitudinalis
Plexus myentericus (Auerbachi)
Plexus intramuscularis circularis
Plexus submucosus (Meissneri)
Plexus periglandularis
Tunica serosa (Peritoneum viscerale)
Tela subserosa
Stratum longitudinale tunicae muscularis
Stroma intermuscularis
Stratum circulare tunicae muscularis
Tunica submucosa
Glandulae submucosae
Lamina muscularis mucosae
Tunica mucosa; Cryptae intestinales (Glandulae intestinales)
Lumen
F. Netter M.D.

Note: Intestinal wall is shown much thicker than in actuality.

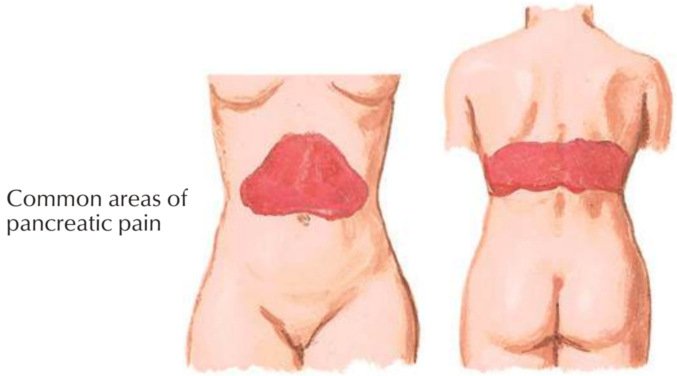
Autonomic Innervation of Liver: Schema

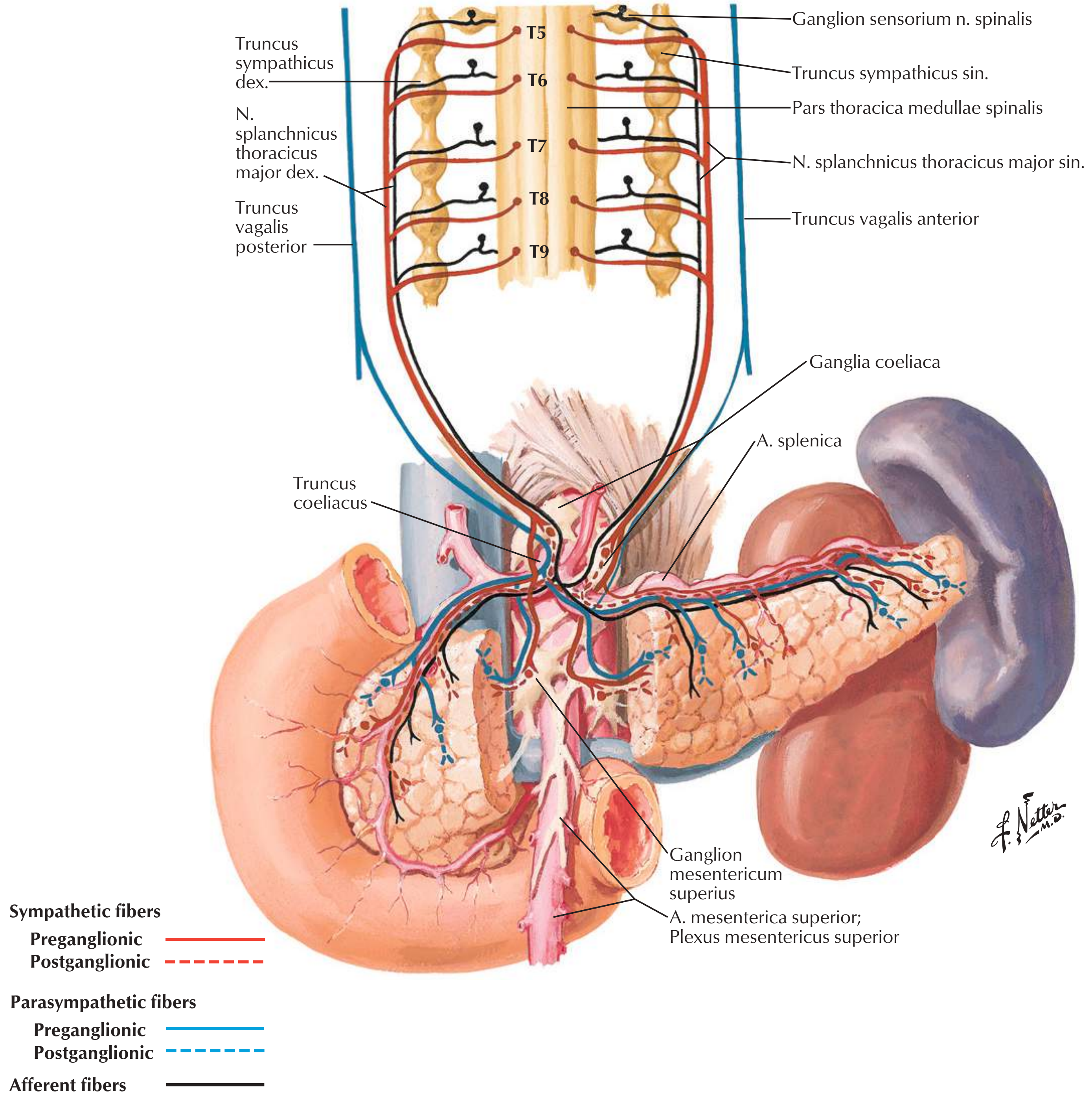
See also Plates 172, 173

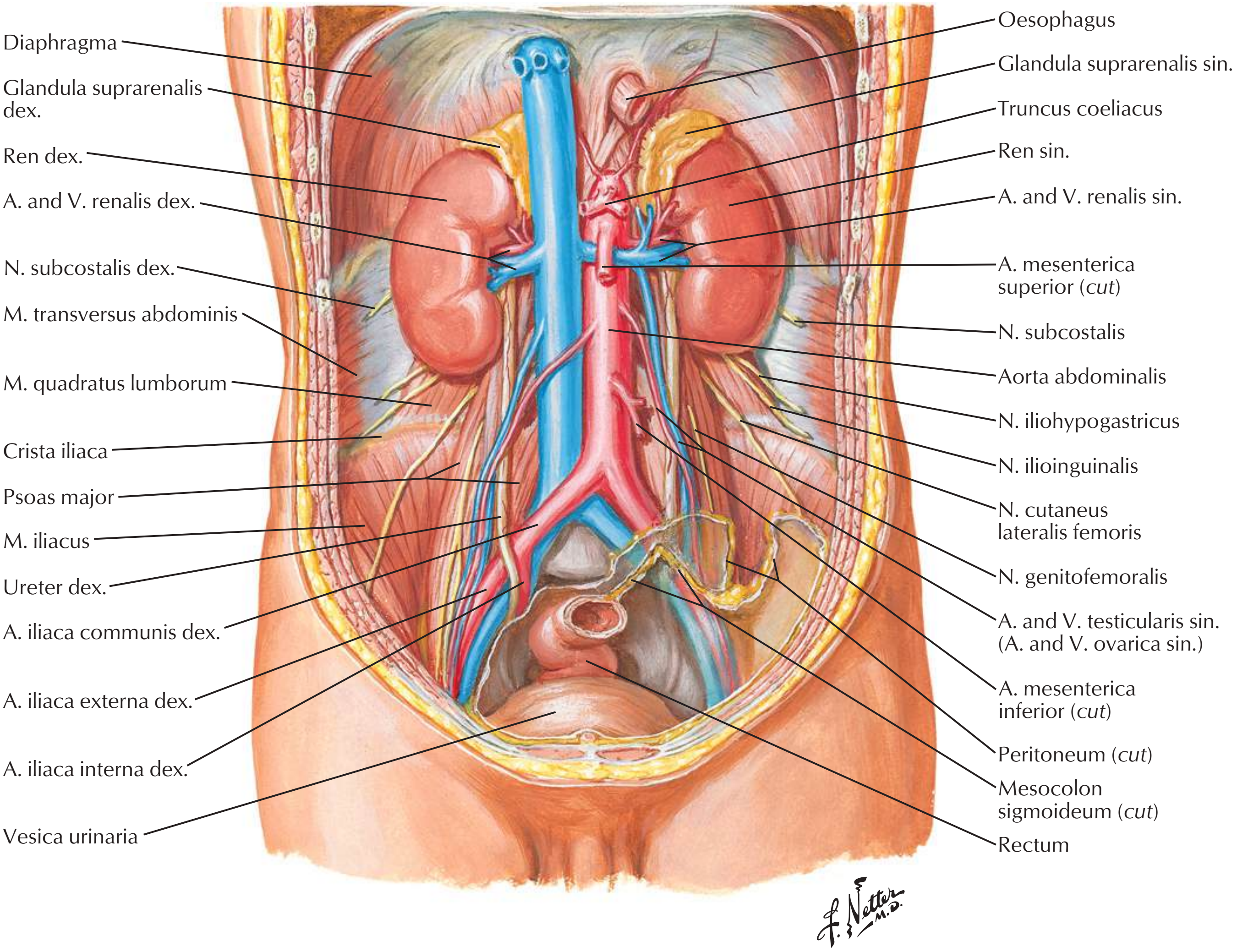

Common areas of referred pain in biliary disease
Truncus sympathicus
Ganglion sensorium n. spinalis
Pars thoracica medullae spinalis
N. splanchnicus thoracicus major dex.
Truncus vagalis posterior
N. phrenicus dex. (to Pars diaphragmatica peritonei parietalis)
N. splanchnicus thoracicus major sin.
Truncus vagalis anterior
T7
T7
T7
T8
T8
T8
T9
T9
T9
T10
T10
T10
Hepar
R. hepaticus trunci vagalis anterioris
Diaphragma
Ganglia coeliaca
A. hepatica communis
A. splenica
Vesica biliaris
Plexus hepaticus anterior
Plexus hepaticus posterior
Aorta
A. gastroduodenalis; Plexus nervosus
Sphincter ampullae hepatopancreaticae
Sympathetic fibers
Preganglionic
Postganglionic
Parasympathetic fibers
Preganglionic
Postganglionic
Afferent fibers

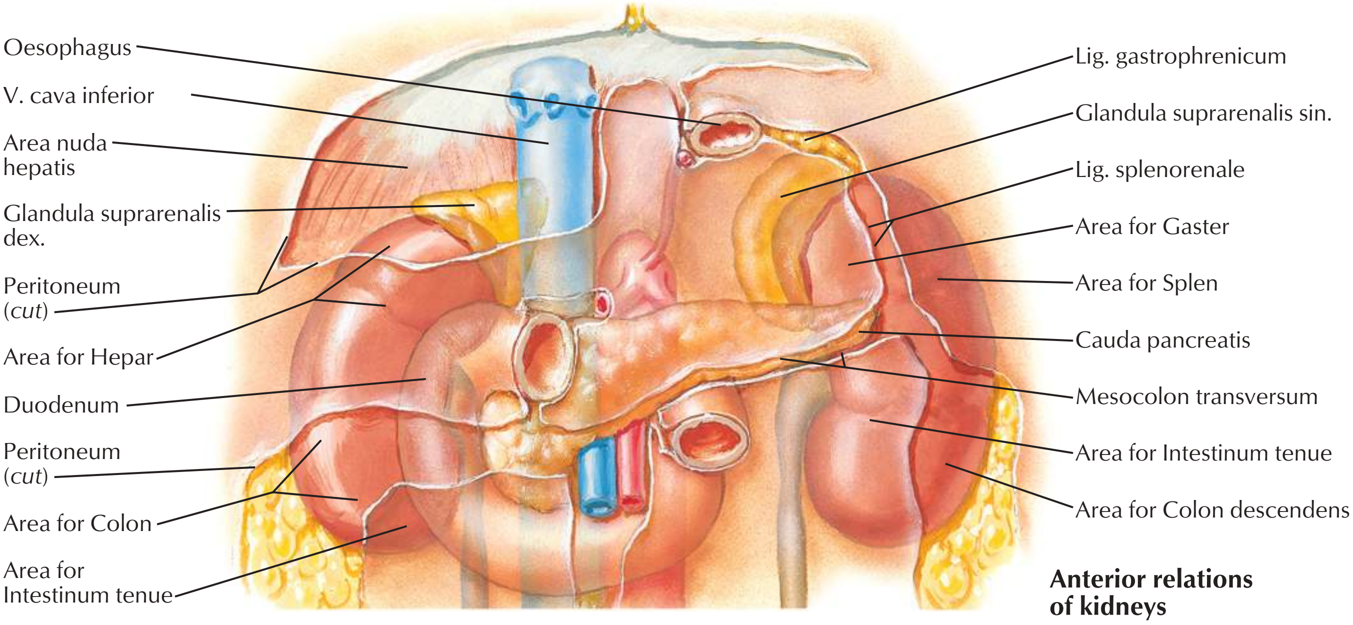
Autonomic Innervation of Pancreas: Schema

See also Plates 172, 173

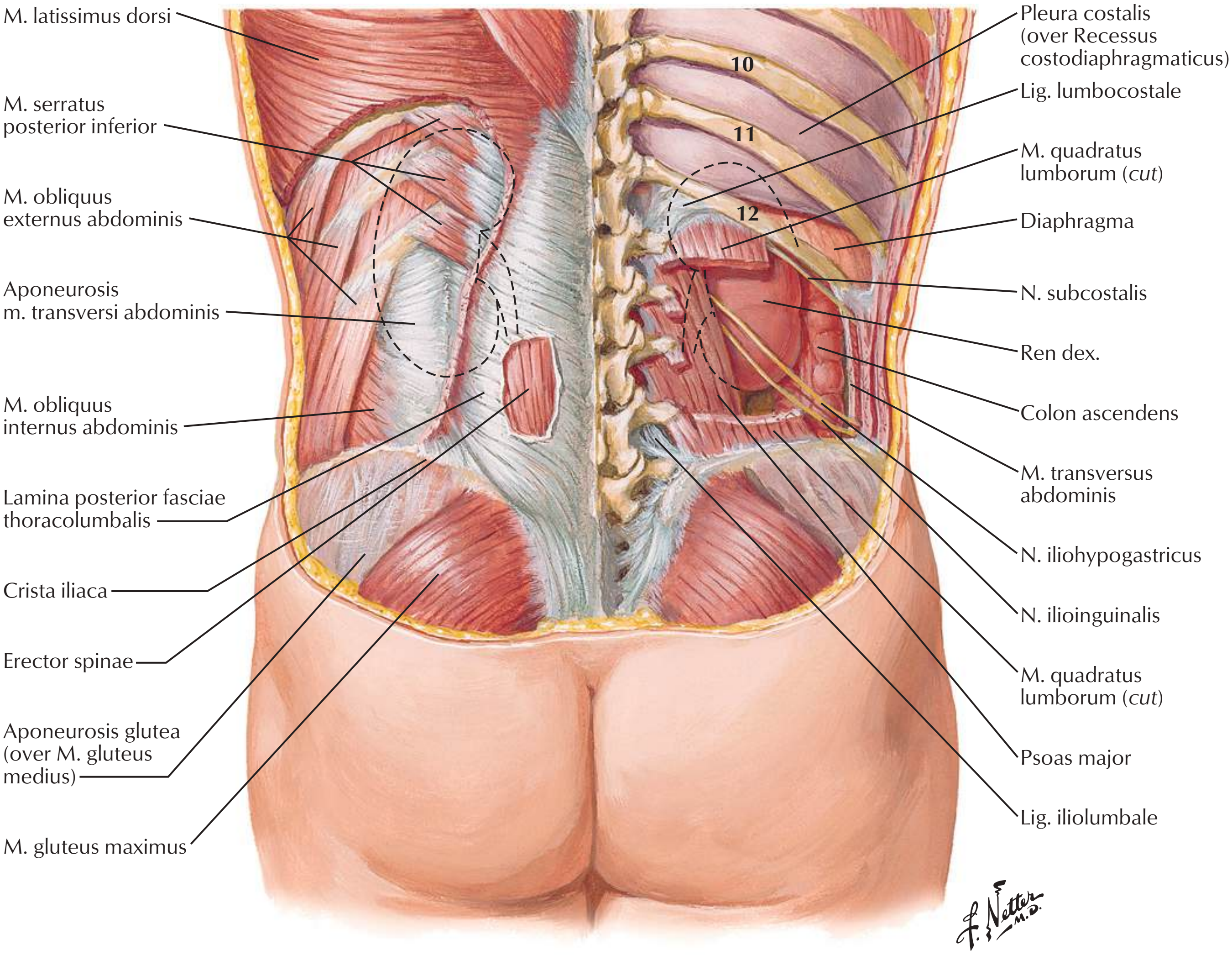

Common areas of pancreatic pain

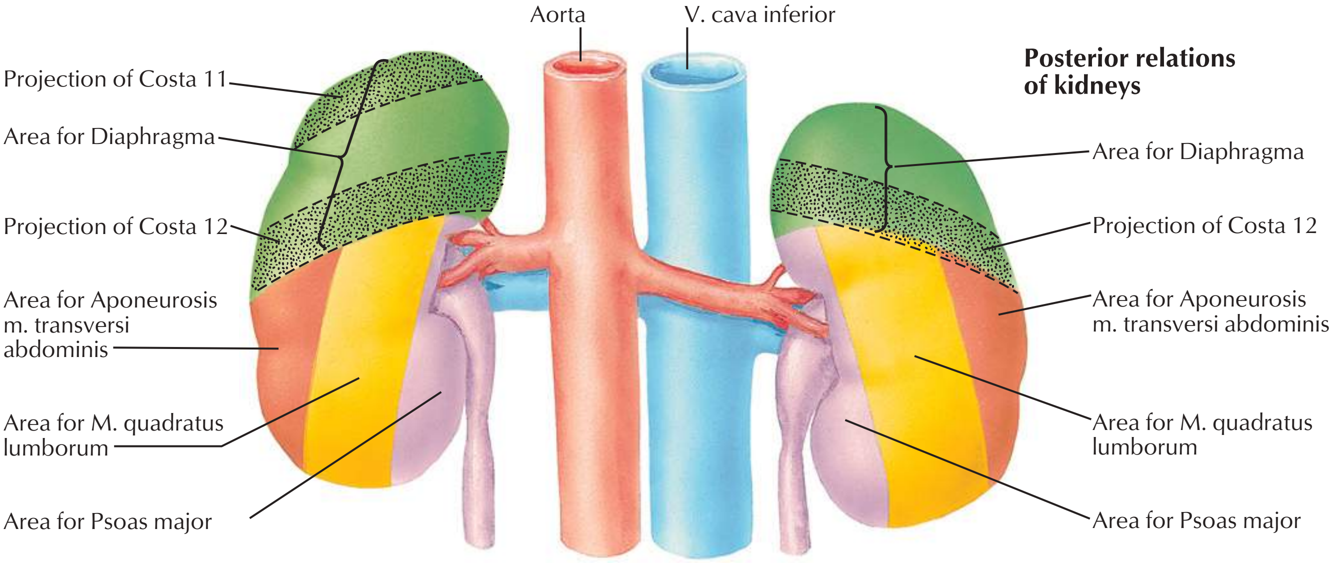

Ganglion sensorium n. spinalis
Truncus sympathicus dex.
T5
T6
T7
T8
T9
Truncus sympathicus sin.
Pars thoracica medullae spinalis
N. splanchnicus thoracicus major dex.
N. splanchnicus thoracicus major sin.
Truncus vagalis posterior
Truncus vagalis anterior
Ganglia coeliaca
A. splenica
Truncus coeliacus
Ganglion mesentericum superius
A. mesenterica superior; Plexus mesentericus superior
F. Netter M.D.
Sympathetic fibers
Preganglionic
Postganglionic
Parasympathetic fibers
Preganglionic
Postganglionic
Afferent fibers


Diaphragma
Glandula suprarenalis dex.
Ren dex.
A. and V. renalis dex.
N. subcostalis dex.
M. transversus abdominis
M. quadratus lumborum
Crista iliaca
Psoas major
M. iliacus
Ureter dex.
A. iliaca communis dex.
A. iliaca externa dex.
A. iliaca interna dex.
Vesica urinaria
Oesophagus
Glandula suprarenalis sin.
Truncus coeliacus
Ren sin.
A. and V. renalis sin.
A. mesenterica superior (*cut*)
N. subcostalis
Aorta abdominalis
N. iliohypogastricus
N. ilioinguinalis
N. cutaneus lateralis femoris
N. genitofemoralis
A. and V. testicularis sin. (A. and V. ovarica sin.)
A. mesenterica inferior (*cut*)
Peritoneum (*cut*)
Mesocolon sigmoideum (*cut*)
Rectum
F. Netter M.D.

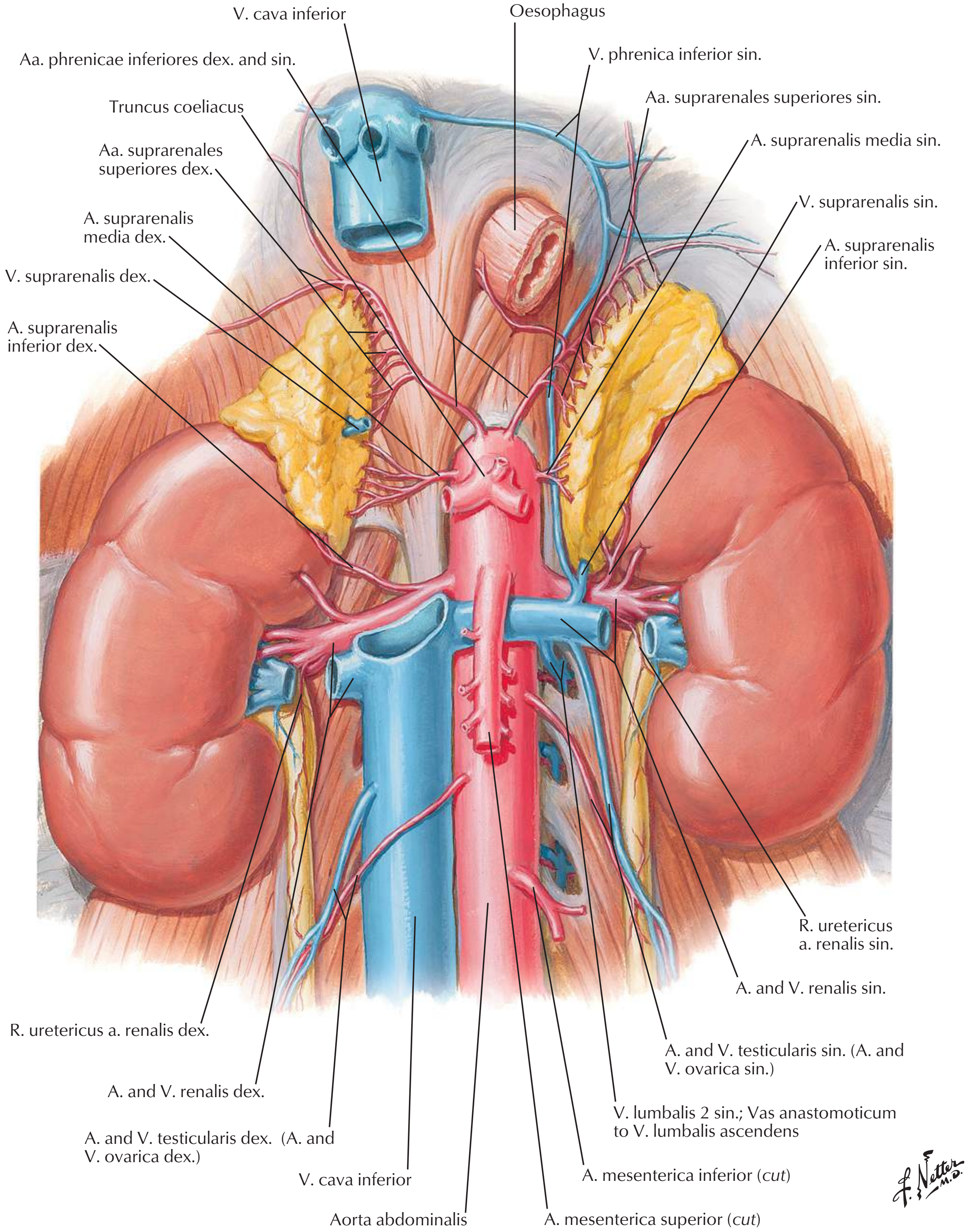

Oesophagus
V. cava inferior
Area nuda hepatis
Glandula suprarenalis dex.
Peritoneum (*cut*)
Area for Hepar
Duodenum
Peritoneum (*cut*)
Area for Colon
Area for Intestinum tenue
Lig. gastrophrenicum
Glandula suprarenalis sin.
Lig. splenorenale
Area for Gaster
Area for Splen
Cauda pancreatis
Mesocolon transversum
Area for Intestinum tenue
Area for Colon descendens

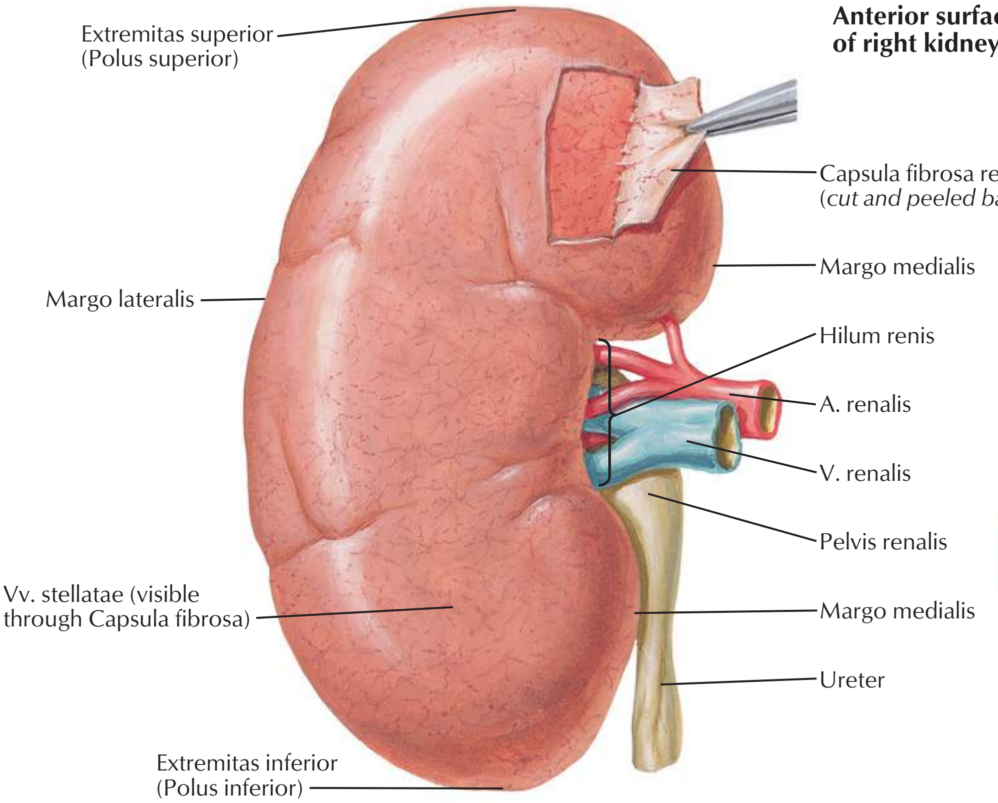
Anterior relations of kidneys


M. latissimus dorsi
M. serratus posterior inferior
M. obliquus externus abdominis
Aponeurosis m. transversi abdominis
M. obliquus internus abdominis
Lamina posterior fasciae thoracolumbalis
Crista iliaca
Erector spinae
Aponeurosis glutea (over M. gluteus medius)
M. gluteus maximus
10
11
12
Pleura costalis (over Recessus costodiaphragmaticus)
Lig. lumbocostale
M. quadratus lumborum (*cut*)
Diaphragma
N. subcostalis
Ren dex.
Colon ascendens
M. transversus abdominis
N. iliohypogastricus
N. ilioinguinalis
M. quadratus lumborum (*cut*)
Psoas major
Lig. iliolumbale
F. Netter M.D.

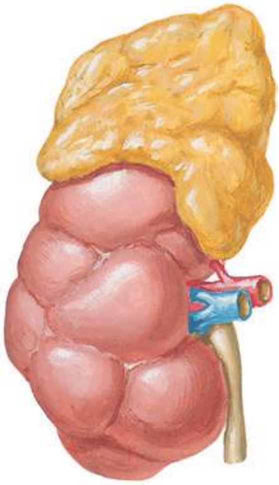

Aorta
V. cava inferior
Projection of Costa 11
Area for Diaphragma
Projection of Costa 12
Area for Aponeurosis m. transversi abdominis
Area for M. quadratus lumborum
Area for Psoas major
Area for Diaphragma
Projection of Costa 12
Area for Aponeurosis m. transversi abdominis
Area for M. quadratus lumborum
Area for Psoas major

Posterior relations of kidneys

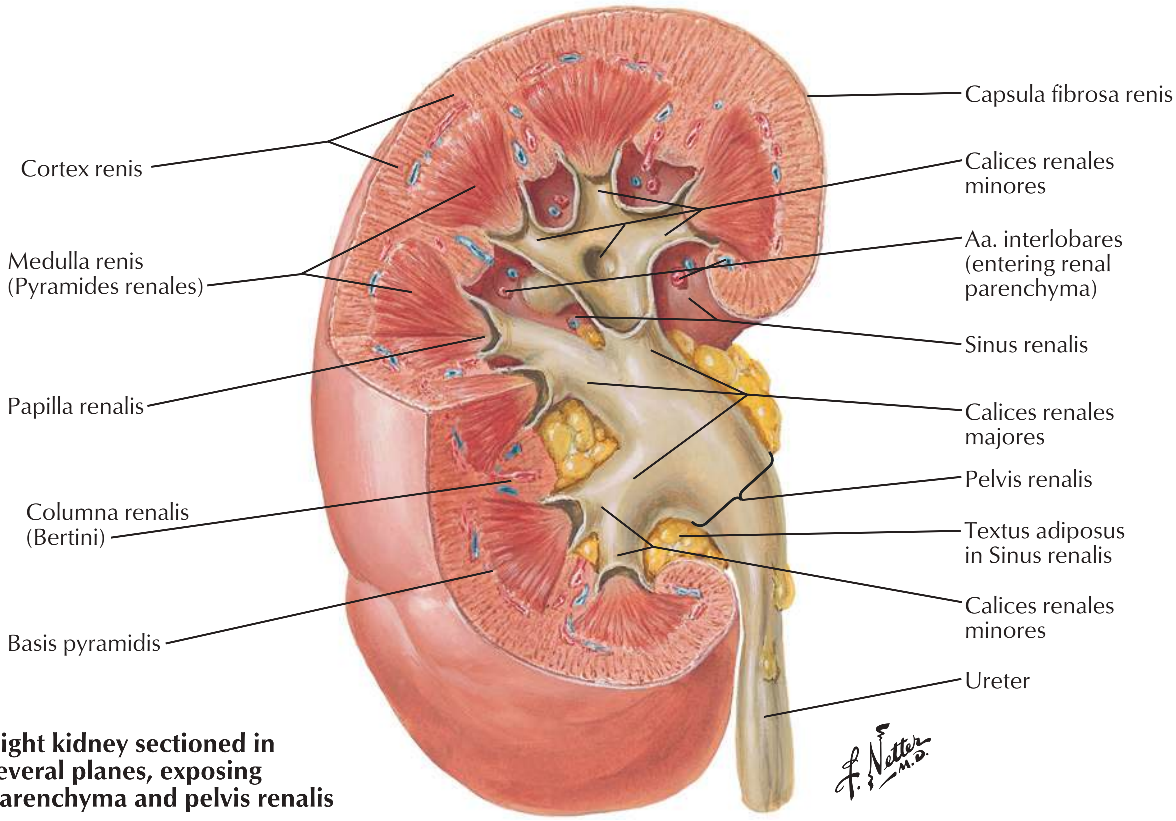

V. cava inferior
Oesophagus
Aa. phrenicae inferiores dex. and sin.
V. phrenica inferior sin.
Truncus coeliacus
Aa. suprarenales superiores sin.
Aa. suprarenales superiores dex.
A. suprarenalis media sin.
A. suprarenalis media dex.
V. suprarenalis sin.
V. suprarenalis dex.
A. suprarenalis inferior sin.
A. suprarenalis inferior dex.
R. uretericus a. renalis sin.
A. and V. renalis sin.
R. uretericus a. renalis dex.
A. and V. testicularis sin. (A. and V. ovarica sin.)
A. and V. renalis dex.
V. lumbalis 2 sin.; Vas anastomoticum to V. lumbalis ascendens
A. and V. testicularis dex. (A. and V. ovarica dex.)
A. mesenterica inferior (*cut*)
V. cava inferior
Aorta abdominalis
A. mesenterica superior (*cut*)


Extremitas superior
(Polus superior)
Capsula fibrosa renis
(*cut and peeled back*)
Margo lateralis
Margo medialis
Hilum renis
A. renalis
V. renalis
Pelvis renalis
Vv. stellatae (visible
through Capsula fibrosa)
Margo medialis
Ureter
Extremitas inferior
(Polus inferior)

Anterior surface of right kidney

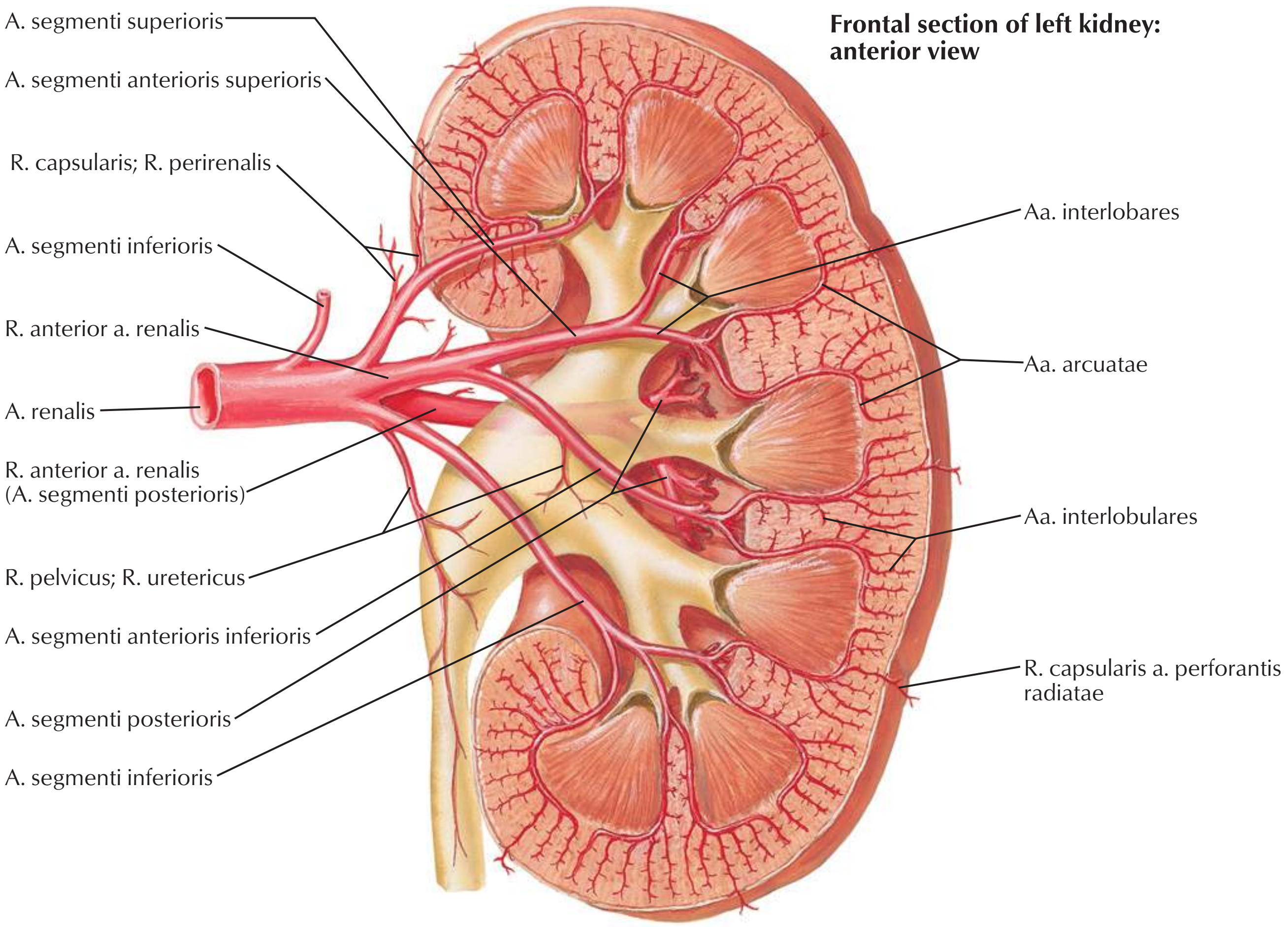


Glandula suprarenalis and lobulated kidney of infant


Capsula fibrosa renis
Cortex renis
Calices renales
minores
Medulla renis
(Pyramides renales)
Aa. interlobares
(entering renal
parenchyma)
Sinus renalis
Papilla renalis
Calices renales
majores
Pelvis renalis
Columna renalis
(Bertini)
Textus adiposus
in Sinus renalis
Calices renales
minores
Basis pyramidis
Ureter
F. Netter M.D.

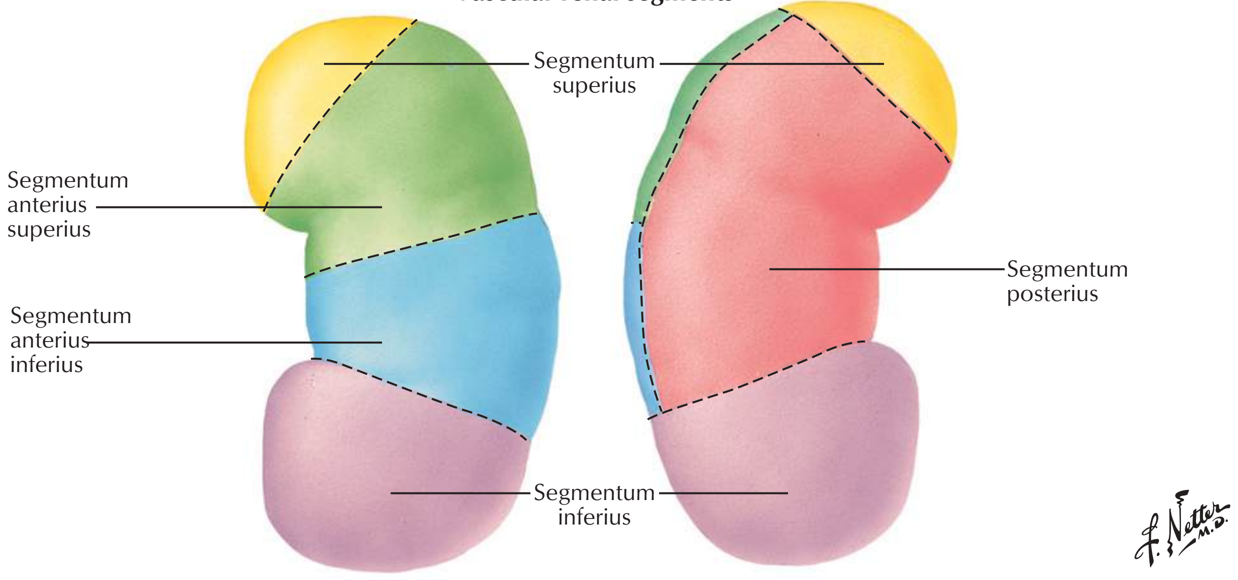
Right kidney sectioned in several planes, exposing parenchyma and pelvis renalis

Intrarenal Arteries and Renal Segments


Frontal section of left kidney: anterior view

A. segmenti superioris
A. segmenti anterioris superioris
R. capsularis; R. perirenalis
A. segmenti inferioris
R. anterior a. renalis
A. renalis
R. anterior a. renalis (A. segmenti posterioris)
R. pelvicus; R. uretericus
A. segmenti anterioris inferioris
A. segmenti posterioris
A. segmenti inferioris
Aa. interlobares
Aa. arcuatae
Aa. interlobulares
R. capsularis a. perforantis radiatae

Vascular renal segments

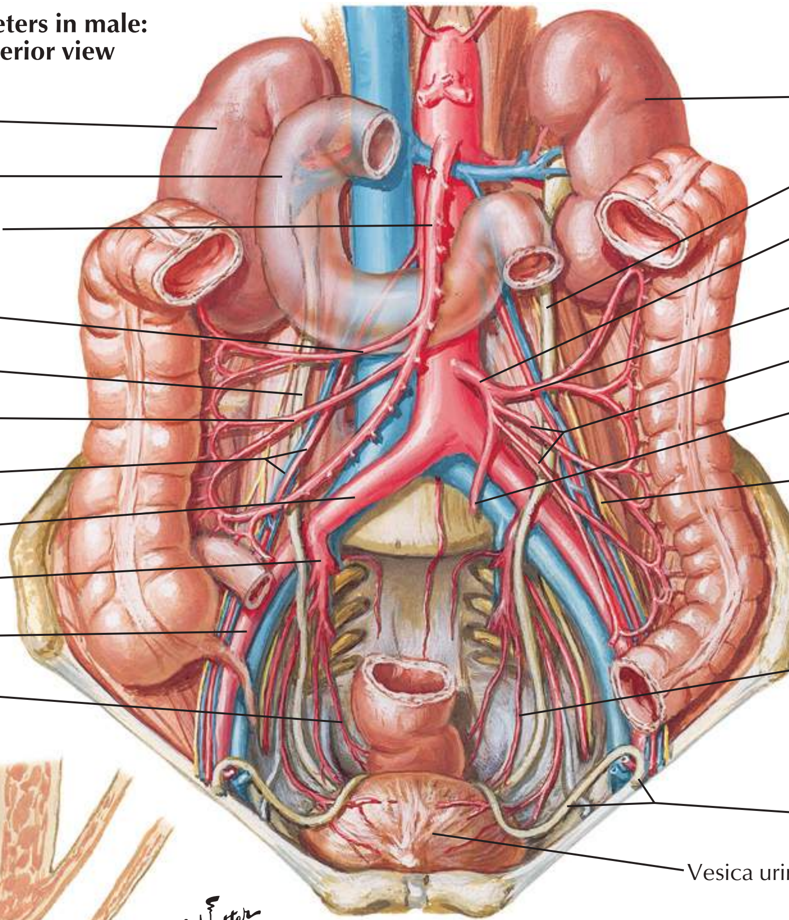

Segmentum superius
Segmentum anterius superius
Segmentum anterius inferius
Segmentum posterius
Segmentum inferius

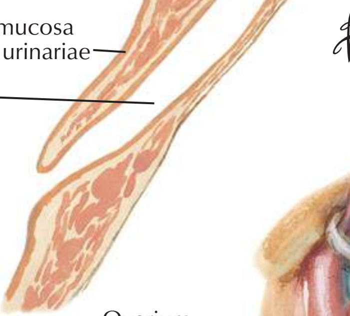
Facies anterior of left kidney

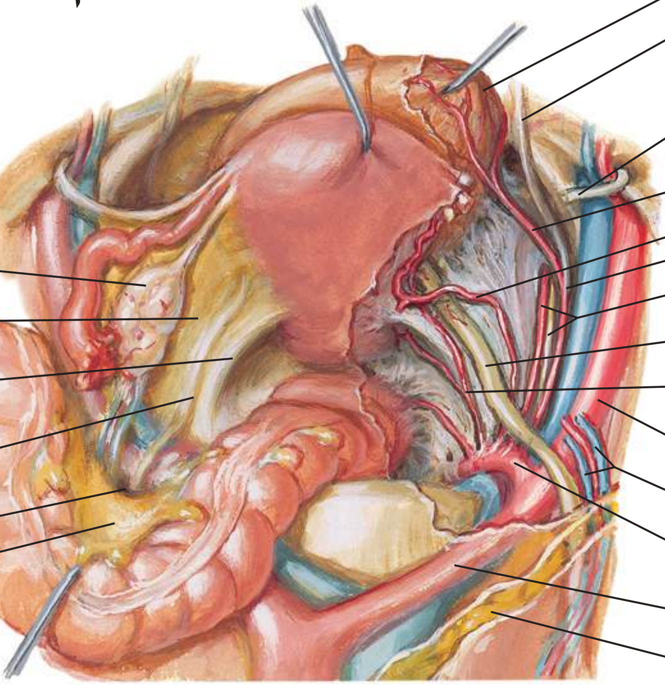
Facies posterior of left kidney

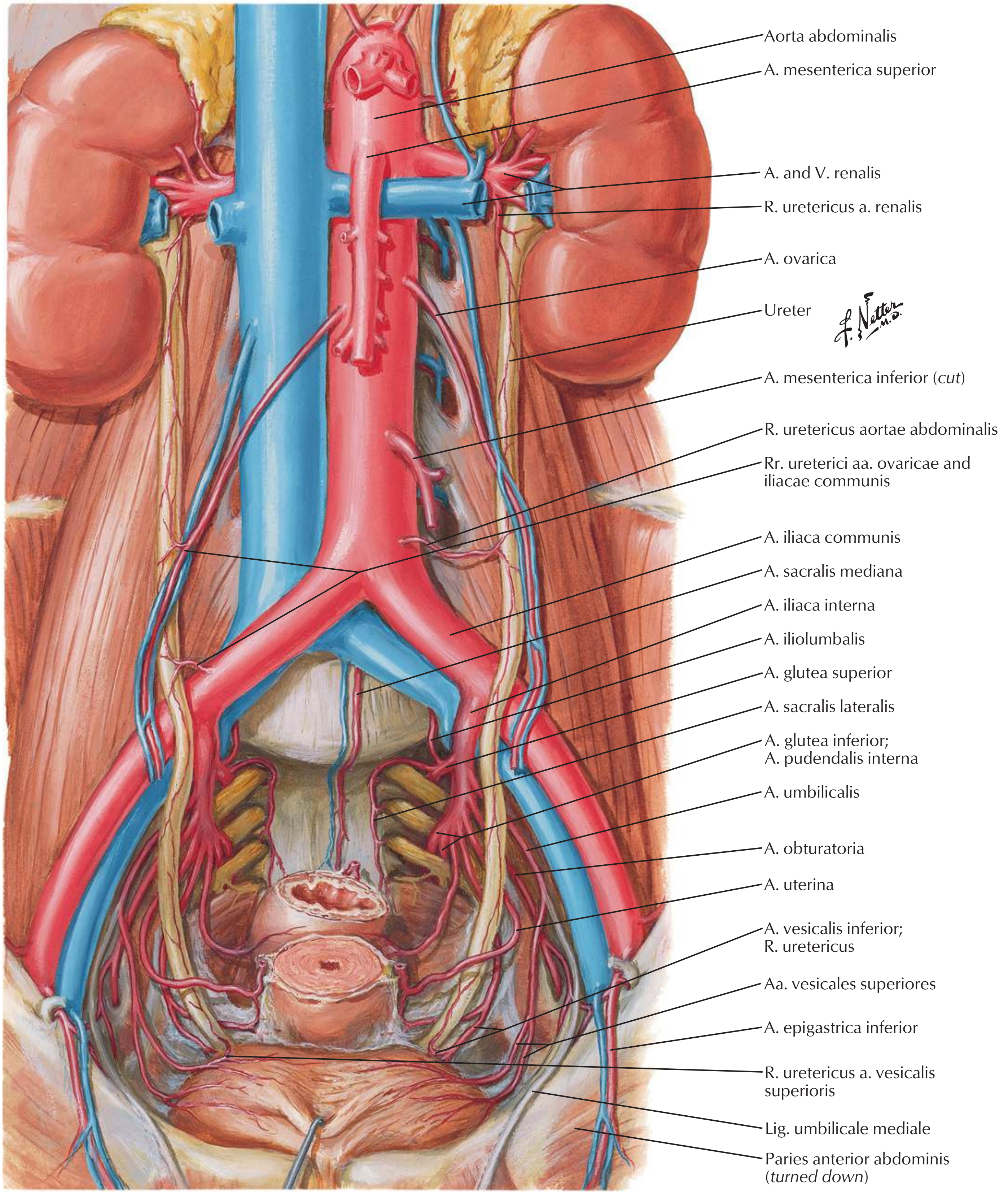
Ureters in Abdomen and Pelvis

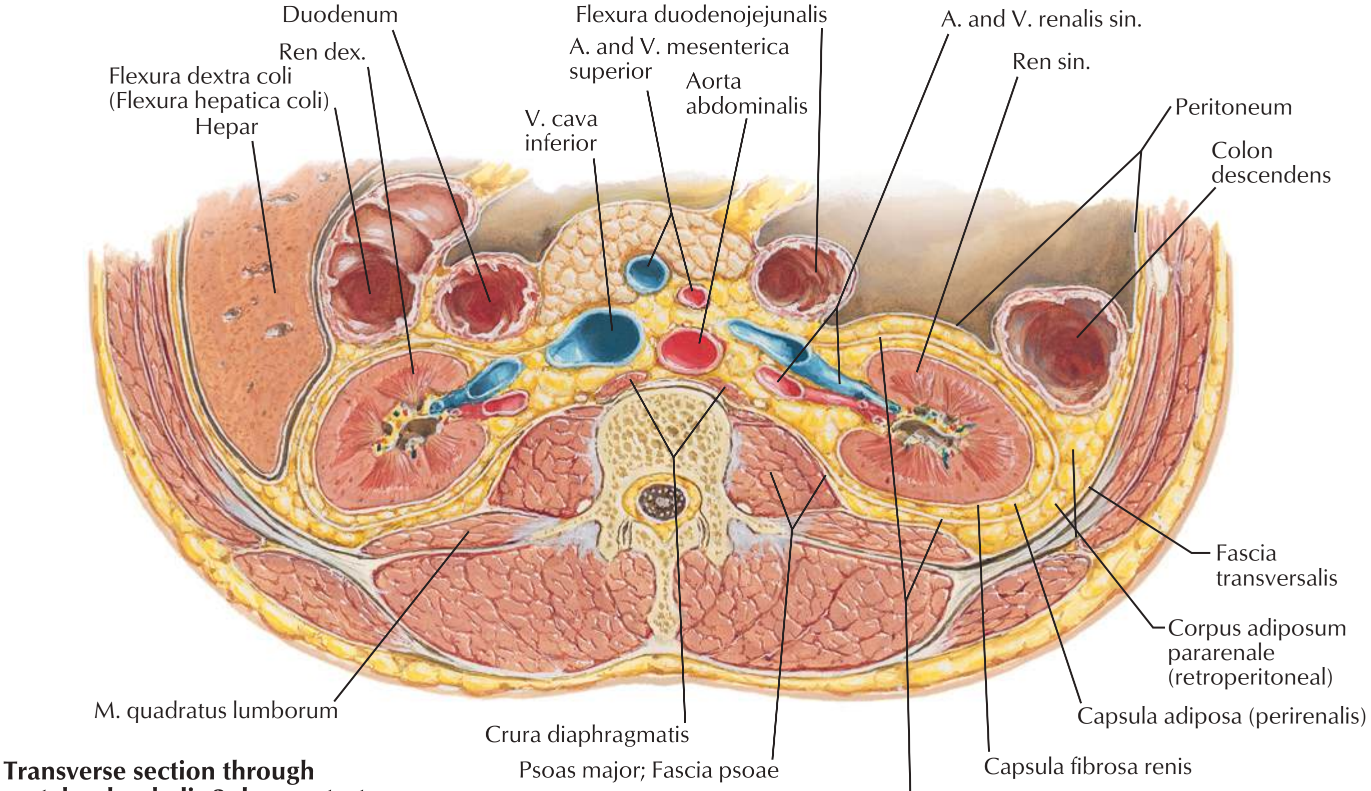
See also Plates 344, 346, 348


Ureters in male: anterior view
Ren dex.
Duodenum
A. mesenterica superior
A. colica dextra
Ureter dex.
A. ileocolica
A. and V. testicularis
A. iliaca communis
A. iliaca interna
A. iliaca externa
A. rectalis media
Ren sin.
Ureter sin.
A. mesenterica inferior
A. colica sinistra
Aa. sigmoideae
A. rectalis superior (*cut*)
N. genitofemoralis
A. vesicalis inferior
Ductus deferens
Vesica urinaria
F. Netter M.D.

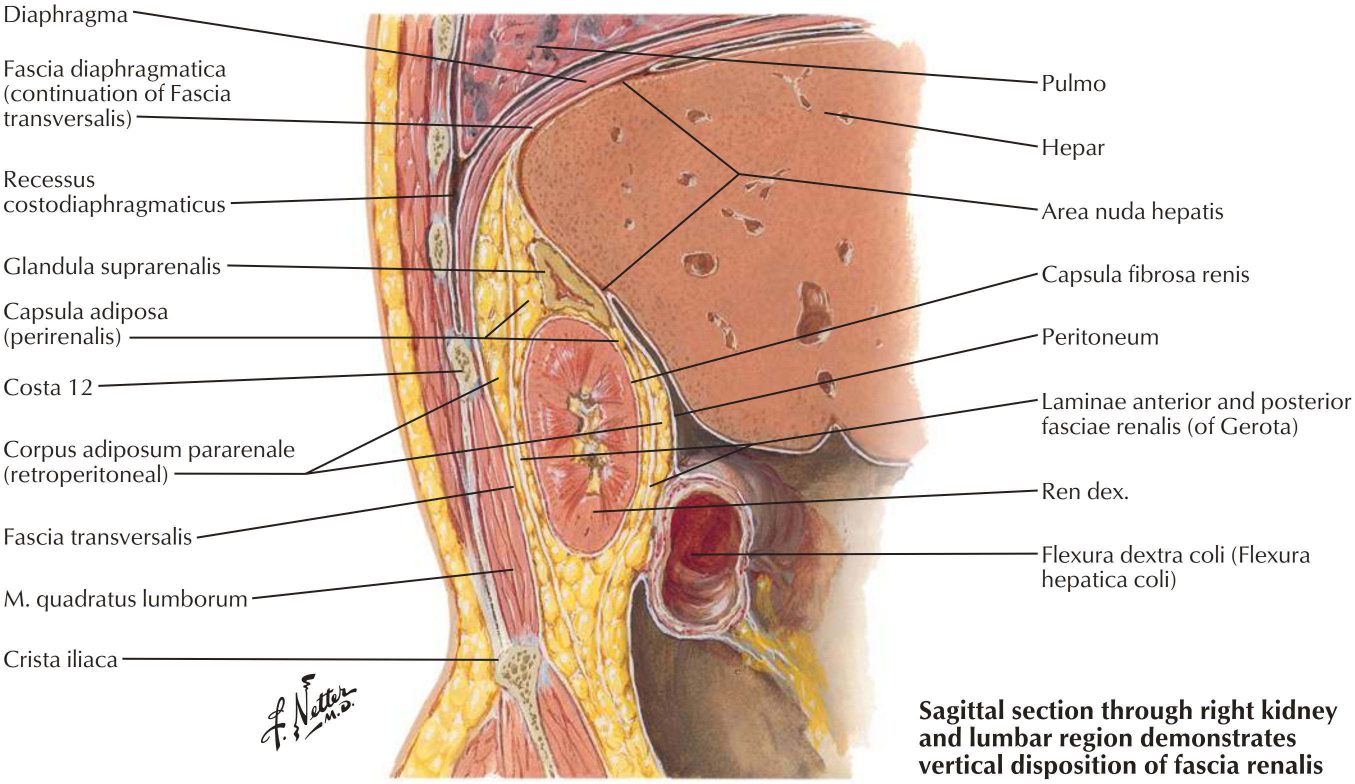

Diagonal course of Ureter through bladder wall
Tunica mucosa vesicae urinariae
Ureter


Ureters in female: superior view
Ovarium
Lig. latum uteri
Plica rectouterina (Plica uterosacralis)
Ureter (retroperitoneal)
Recessus intersigmoideus
Mesocolon sigmoideum
Vesica urinaria
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Lig. teres uteri
A. vesicalis superior
A. uterina
A. umbilicalis
A. obturatoria;
N. obturatorius
Ureter
A. vaginalis;
A. vesicalis inferior
A. iliaca externa
A and V. ovarica (*cut*)
A. iliaca interna
A. iliaca communis
Radix mesenterii


Aorta abdominalis
A. mesenterica superior
A. and V. renalis
R. uretericus a. renalis
A. ovarica
Ureter
A. mesenterica inferior (*cut*)
R. uretericus aortae abdominalis
Rr. ureterici aa. ovaricae and iliacae communis
A. iliaca communis
A. sacralis mediana
A. iliaca interna
A. iliolumbalis
A. glutea superior
A. sacralis lateralis
A. glutea inferior; A. pudendalis interna
A. umbilicalis
A. obturatoria
A. uterina
A. vesicalis inferior; R. uretericus
Aa. vesicales superiores
A. epigastrica inferior
R. uretericus a. vesicalis superioris
Lig. umbilicale mediale
Paries anterior abdominis (*turned down*)


Duodenum
Ren dex.
Flexura dextra coli (Flexura hepatica coli)
Hepar
Flexura duodenojejunalis
A. and V. mesenterica superior
V. cava inferior
Aorta abdominalis
A. and V. renalis sin.
Ren sin.
Peritoneum
Colon descendens
Fascia transversalis
Corpus adiposum pararenale (retroperitoneal)
Capsula adiposa (perirenalis)
Capsula fibrosa renis
Laminae anterior and posterior fasciae renalis (of Gerota)
M. quadratus lumborum
Crura diaphragmatis
Psoas major; Fascia psoae

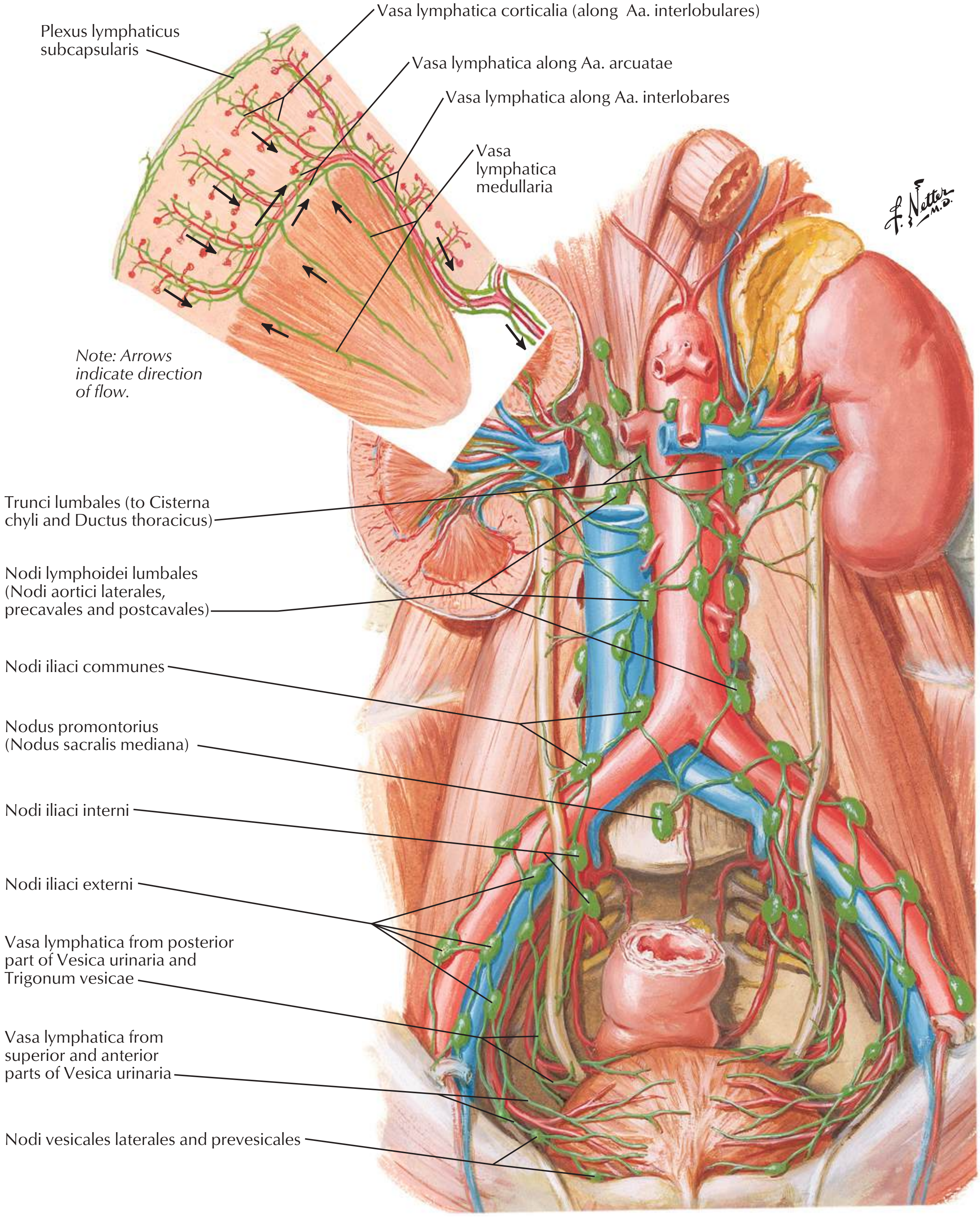
Transverse section through vertebra lumbalis 2 demonstrates horizontal disposition of fascia renalis


Diaphragma
Fascia diaphragmatica (continuation of Fascia transversalis)
Recessus costodiaphragmaticus
Glandula suprarenalis
Capsula adiposa (perirenalis)
Costa 12
Corpus adiposum pararenale (retroperitoneal)
Fascia transversalis
M. quadratus lumborum
Crista iliaca
Pulmo
Hepar
Area nuda hepatis
Capsula fibrosa renis
Peritoneum
Laminae anterior and posterior fasciae renalis (of Gerota)
Ren dex.
Flexura dextra coli (Flexura hepatica coli)
F. Netter M.D.

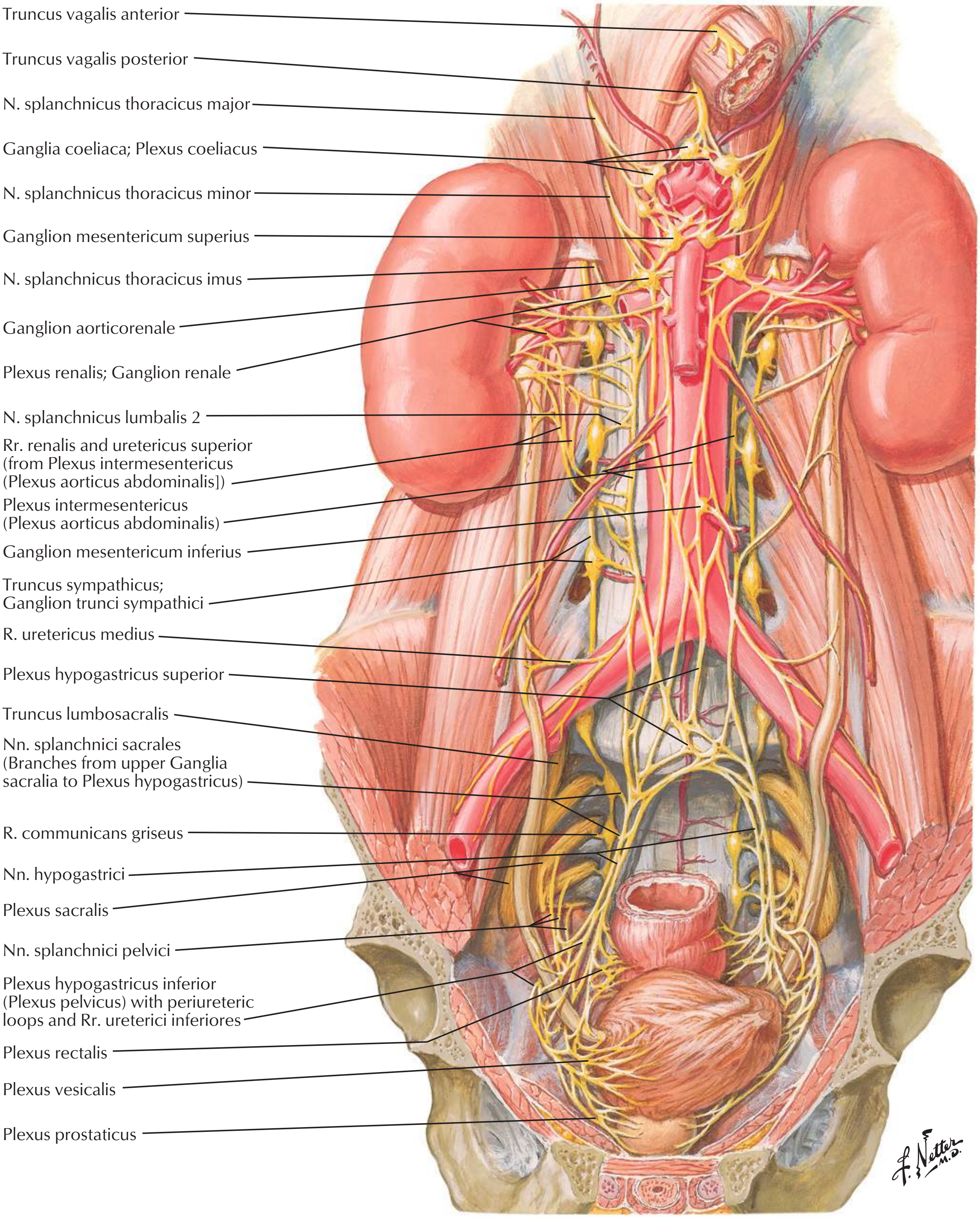
Sagittal section through right kidney and lumbar region demonstrates vertical disposition of fascia renalis

Lymph Vessels and Nodes of Kidneys and Urinary Bladder

See also Plates 388, 390

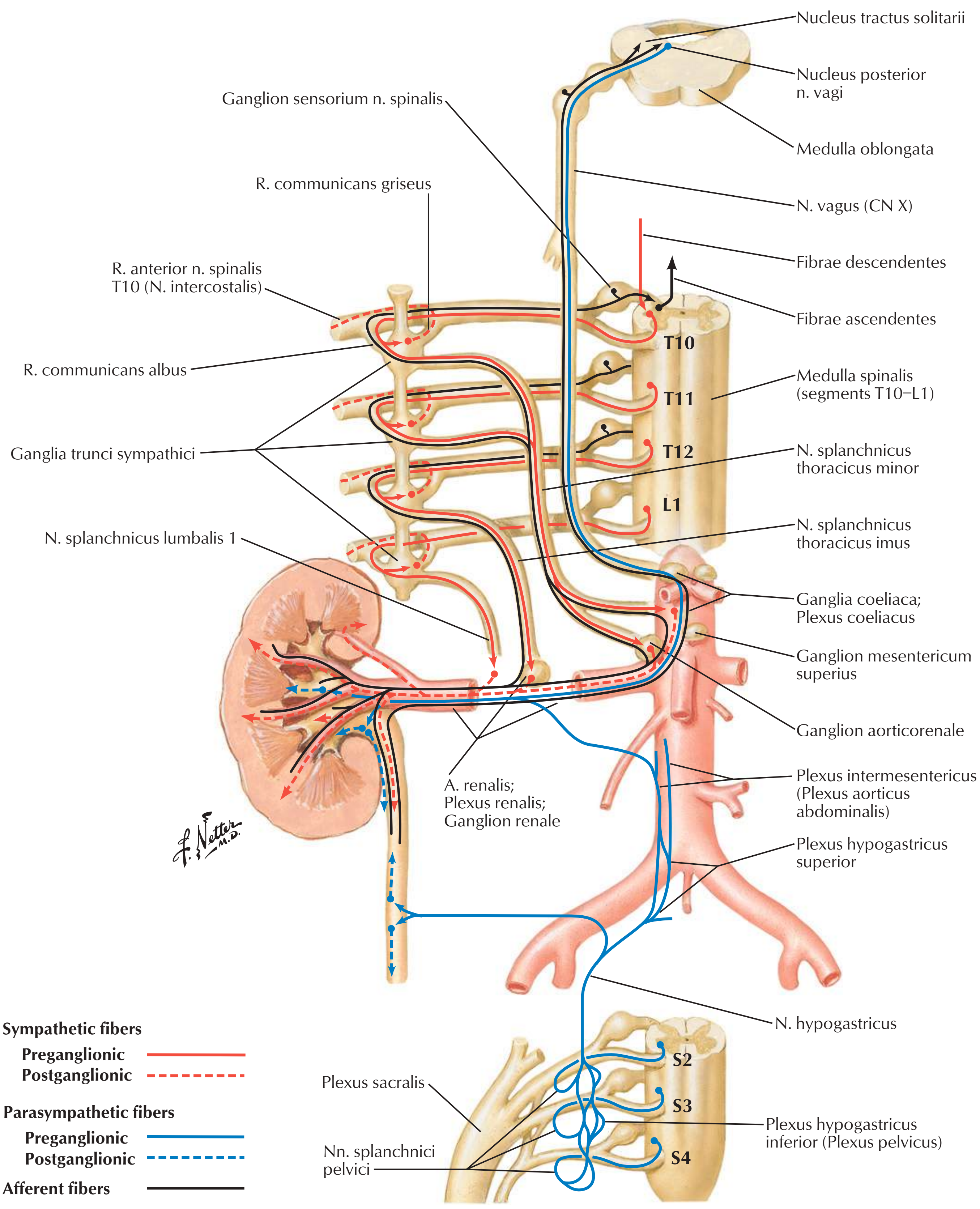

Plexus lymphaticus subcapsularis
Vasa lymphatica corticalia (along Aa. interlobulares)
Vasa lymphatica along Aa. arcuatae
Vasa lymphatica along Aa. interlobares
Vasa lymphatica medullaria
Trunci lumbales (to Cisterna chyli and Ductus thoracicus)
Nodi lymphoidei lumbales (Nodi aortici laterales, precavales and postcavales)
Nodi iliaci communes
Nodus promontorius (Nodus sacralis mediana)
Nodi iliaci interni
Nodi iliaci externi
Vasa lymphatica from posterior part of Vesica urinaria and Trigonum vesicae
Vasa lymphatica from superior and anterior parts of Vesica urinaria
Nodi vesicales laterales and prevesicales

Note: Arrows indicate direction of flow.


Truncus vagalis anterior
Truncus vagalis posterior
N. splanchnicus thoracicus major
Ganglia coeliaca; Plexus coeliacus
N. splanchnicus thoracicus minor
Ganglion mesentericum superius
N. splanchnicus thoracicus imus
Ganglion aorticorenale
Plexus renalis; Ganglion renale
N. splanchnicus lumbalis 2
Rr. renalis and uretericus superior (from Plexus intermesentericus (Plexus aorticus abdominalis])
Plexus intermesentericus (Plexus aorticus abdominalis)
Ganglion mesentericum inferius
Truncus sympathicus; Ganglion trunci sympathici
R. uretericus medius
Plexus hypogastricus superior
Truncus lumbosacralis
Nn. splanchnici sacrales (Branches from upper Ganglia sacralia to Plexus hypogastricus)
R. communicans griseus
Nn. hypogastrici
Plexus sacralis
Nn. splanchnici pelvici
Plexus hypogastricus inferior (Plexus pelvicus) with periureteric loops and Rr. ureterici inferiores
Plexus rectalis
Plexus vesicalis
Plexus prostaticus
F. Netter M.D.

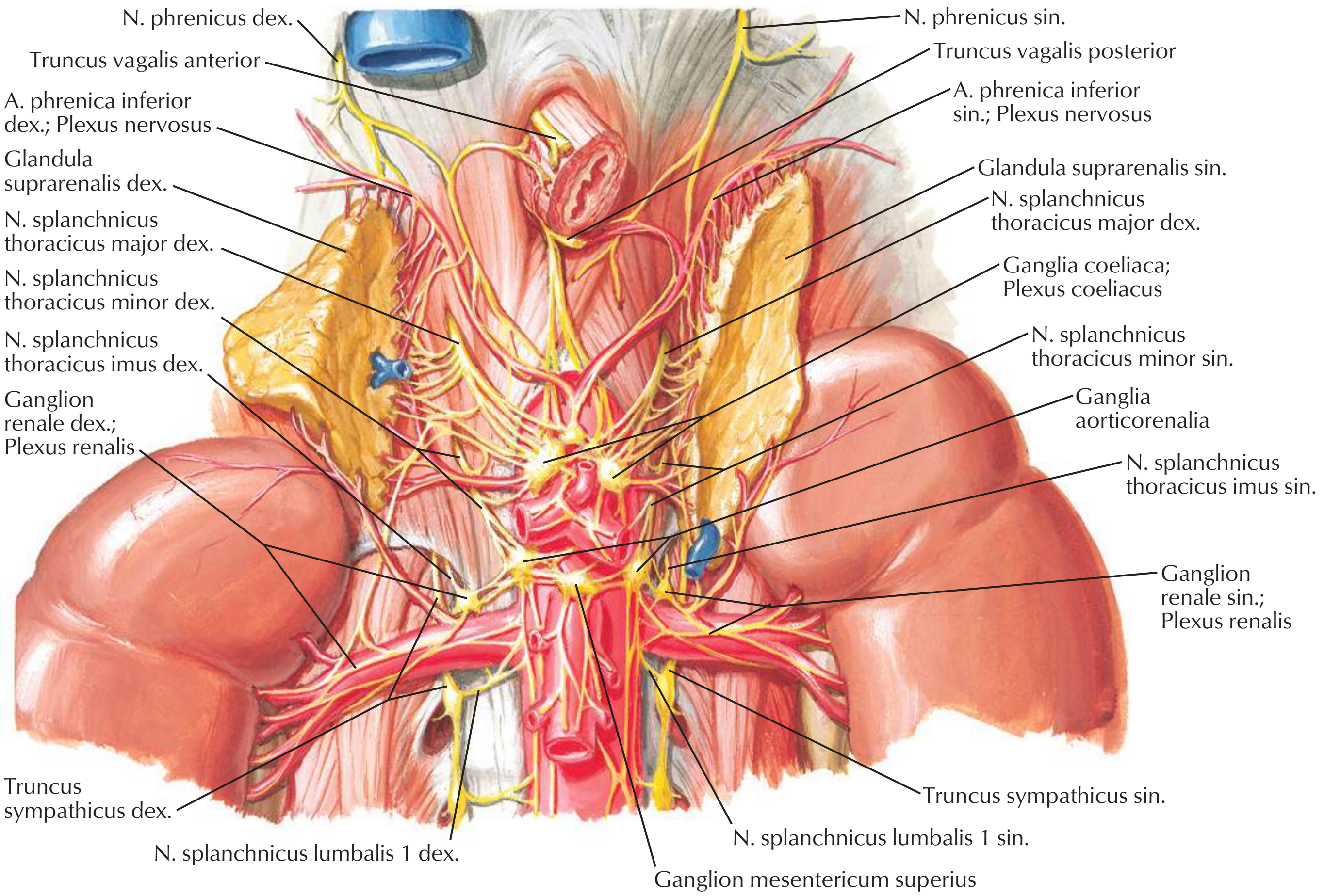
Autonomic Innervation of Kidneys and Upper Ureters: Schema

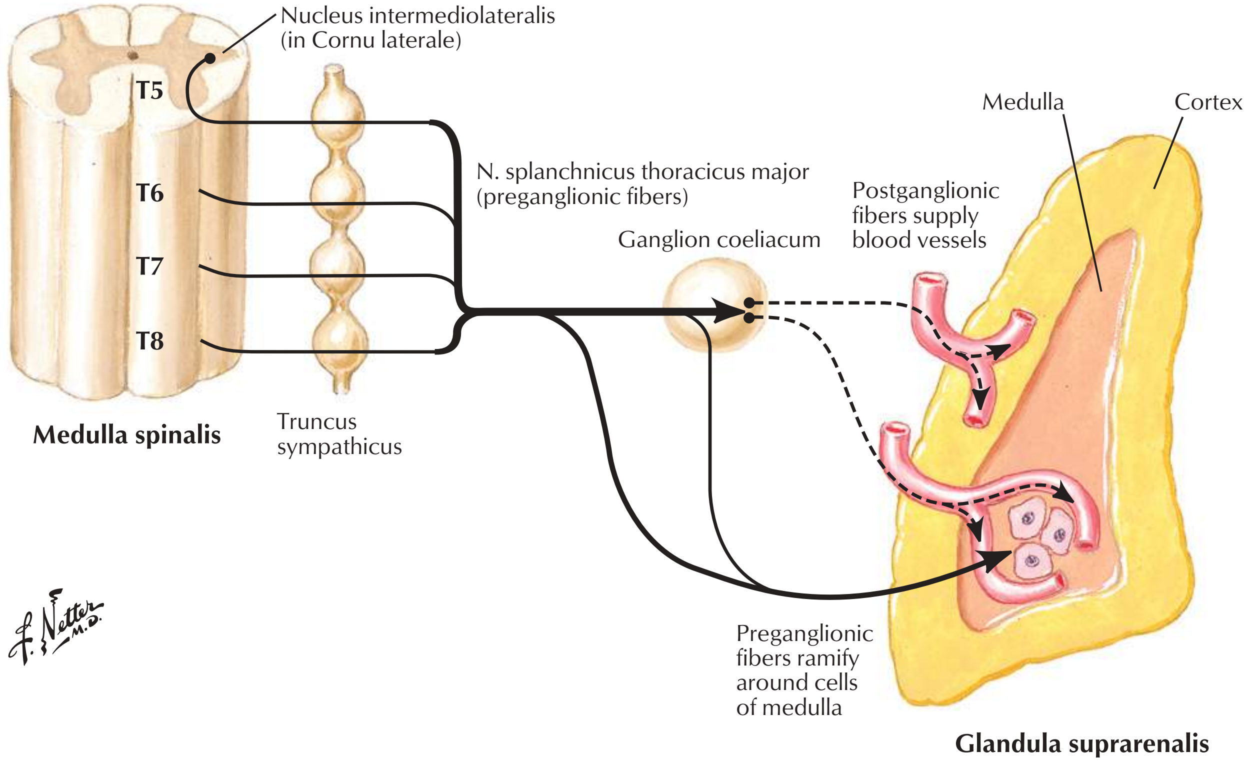
See also Plates 172, 173, 399


Nucleus tractus solitarii
Nucleus posterior n. vagi
Ganglion sensorium n. spinalis
Medulla oblongata
R. communicans griseus
N. vagus (CN X)
Fibrae descendentes
R. anterior n. spinalis T10 (N. intercostalis)
Fibrae ascendentes
T10
R. communicans albus
T11
Medulla spinalis (segments T10–L1)
T12
Ganglia trunci sympathici
N. splanchnicus thoracicus minor
L1
N. splanchnicus lumbalis 1
N. splanchnicus thoracicus imus
Ganglia coeliaca; Plexus coeliacus
Ganglion mesentericum superius
Ganglion aorticorenale
A. renalis; Plexus renalis; Ganglion renale
Plexus intermesentericus (Plexus aorticus abdominalis)
Plexus hypogastricus superior
N. hypogastricus
S2
Plexus sacralis
S3
Plexus hypogastricus inferior (Plexus pelvicus)
Nn. splanchnici pelvici
S4
Sympathetic fibers
Preganglionic
Postganglionic
Parasympathetic fibers
Preganglionic
Postganglionic
Afferent fibers

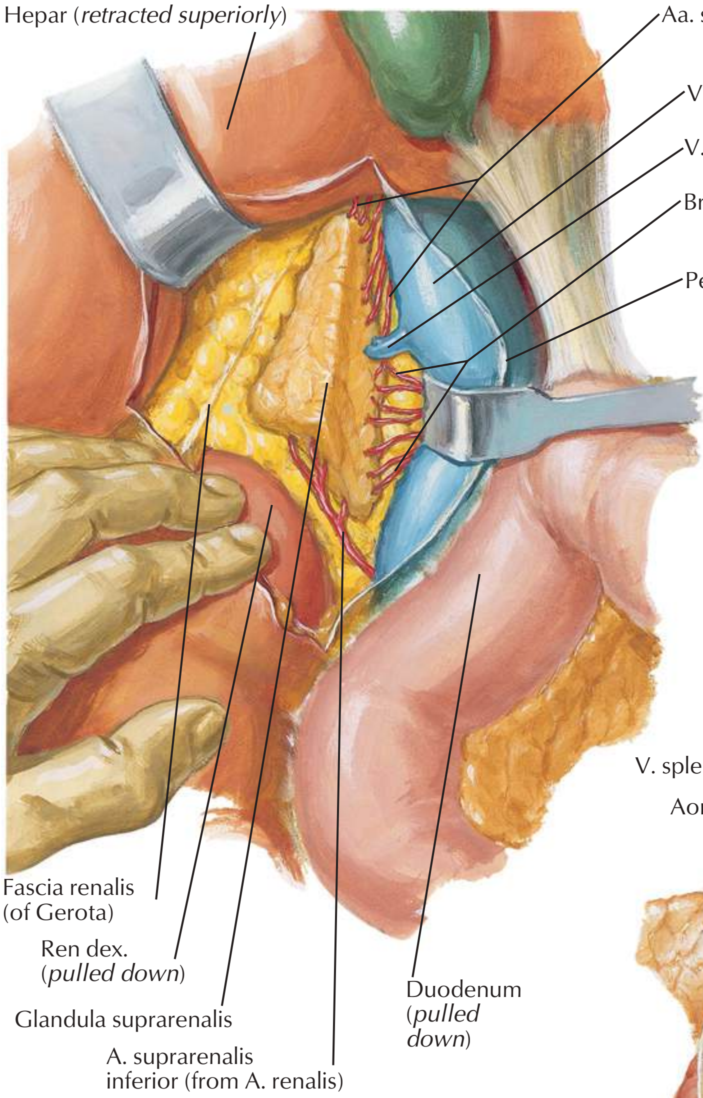
Autonomic Nerves of Suprarenal Glands: Dissection and Schema

See also Plates 172, 173


N. phrenicus dex.
Truncus vagalis anterior
A. phrenica inferior dex.; Plexus nervosus
Glandula suprarenalis dex.
N. splanchnicus thoracicus major dex.
N. splanchnicus thoracicus minor dex.
N. splanchnicus thoracicus imus dex.
Ganglion renale dex.; Plexus renalis
Truncus sympathicus dex.
N. splanchnicus lumbalis 1 dex.
N. phrenicus sin.
Truncus vagalis posterior
A. phrenica inferior sin.; Plexus nervosus
Glandula suprarenalis sin.
N. splanchnicus thoracicus major dex.
Ganglia coeliaca; Plexus coeliacus
N. splanchnicus thoracicus minor sin.
Ganglia aorticorenalia
N. splanchnicus thoracicus imus sin.
Ganglion renale sin.; Plexus renalis
Truncus sympathicus sin.
N. splanchnicus lumbalis 1 sin.
Ganglion mesentericum superius

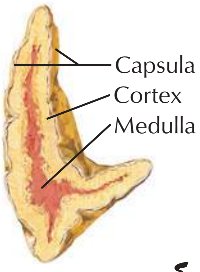

Nucleus intermediolateralis (in Cornu laterale)
T5
T6
T7
T8
Medulla spinalis
Truncus sympathicus
N. splanchnicus thoracicus major (preganglionic fibers)
Ganglion coeliacum
Postganglionic fibers supply blood vessels
Medulla
Cortex
Preganglionic fibers ramify around cells of medulla
Glandula suprarenalis

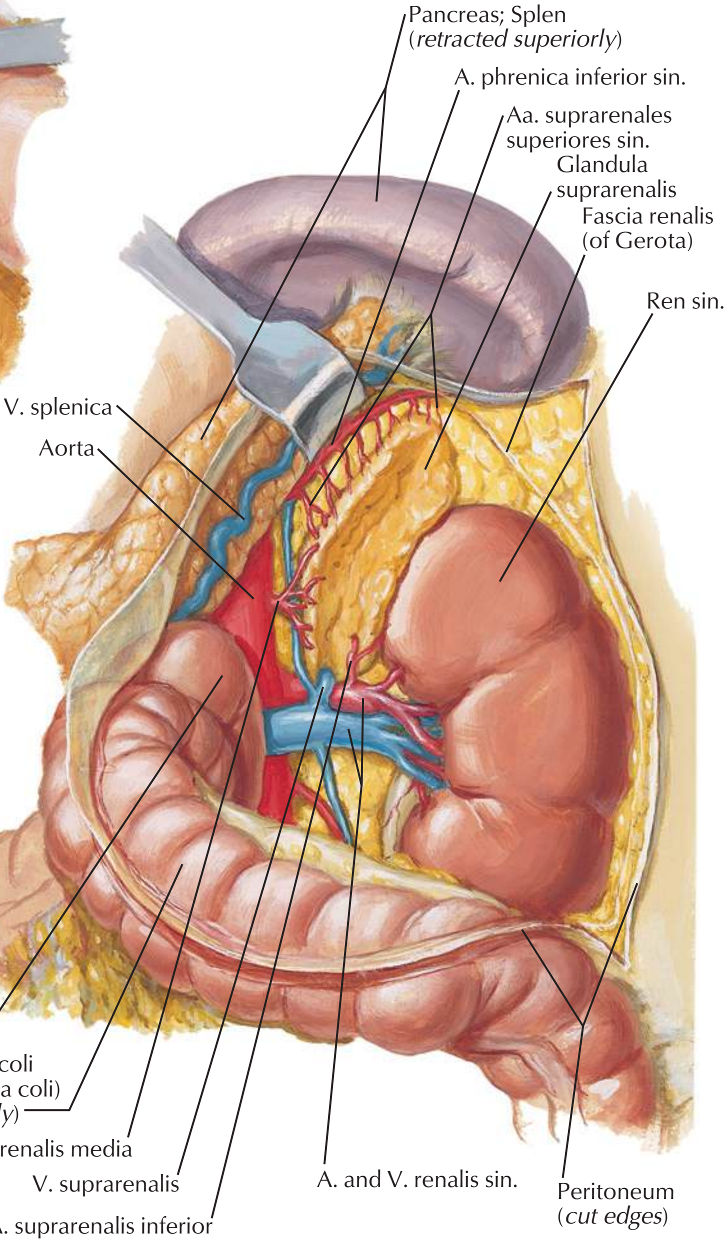
Arteries and Veins of Suprarenal Glands in Situ


Hepar (*retracted superiorly*)
Aa. suprarenales superiores (from A. phrenica inferior)
V. cava inferior (*retracted medially*)
V. suprarenalis
Branches of A. suprarenalis media (from Aorta abdominalis)
Peritoneum (*cut edge*)
Fascia renalis (of Gerota)
Ren dex. (*pulled down*)
Glandula suprarenalis
A. suprarenalis inferior (from A. renalis)
Duodenum (*pulled down*)

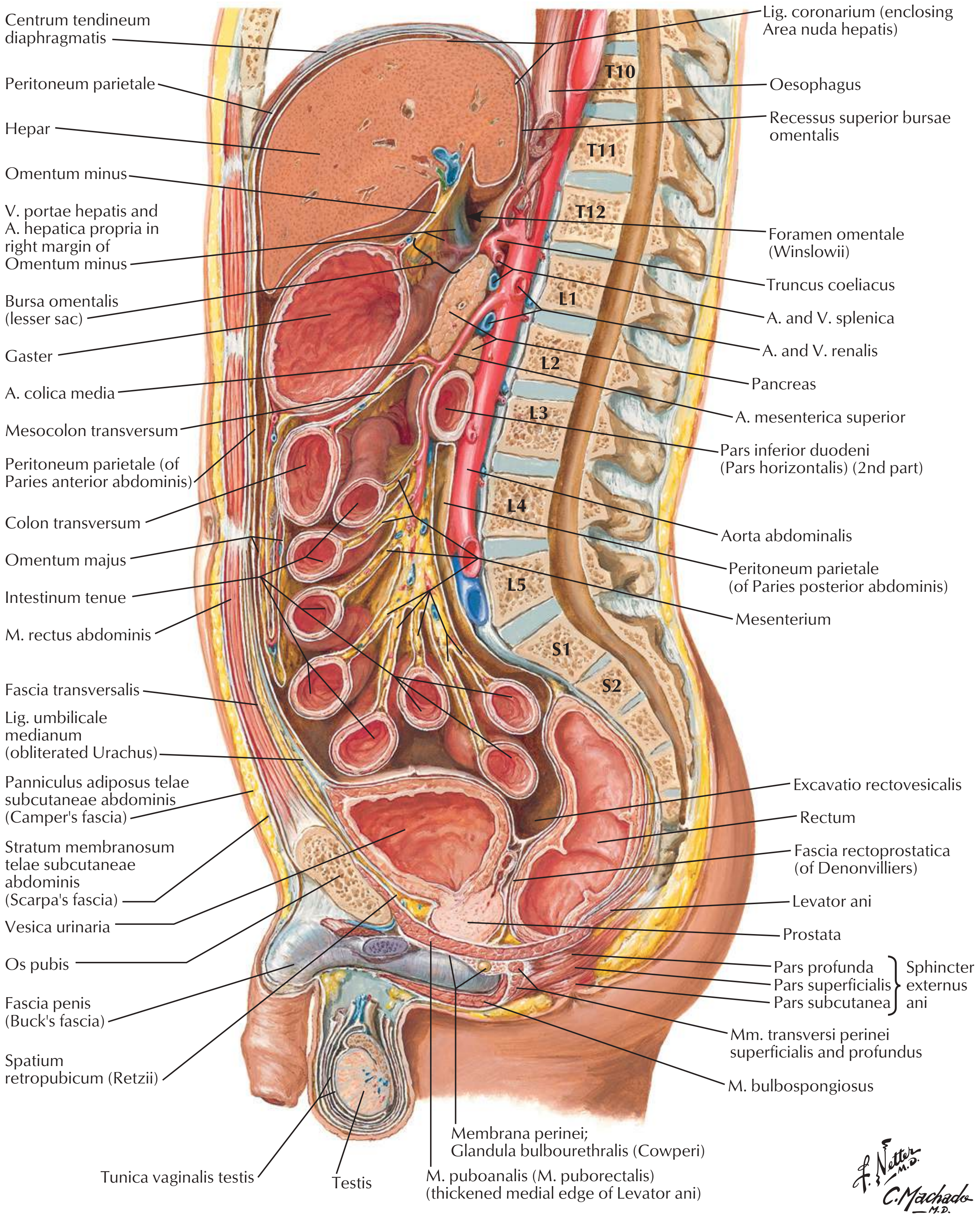
Abdominal exposure of right Glandula suprarenalis

Cross section through Glandula suprarenalis

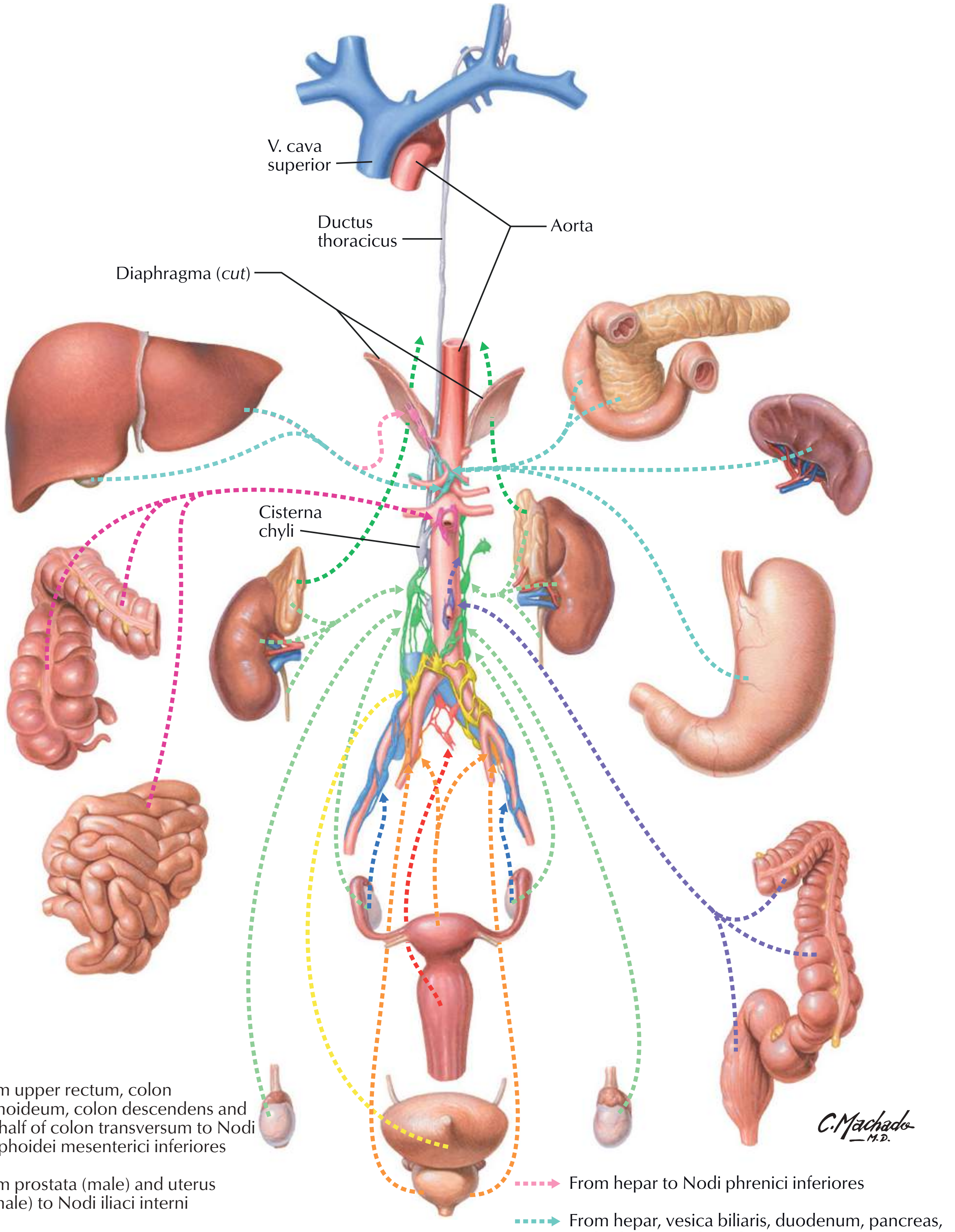

Capsula
Cortex
Medulla


Pancreas; Splen (*retracted superiorly*)
A. phrenica inferior sin.
Aa. suprarenales superiores sin.
Glandula suprarenalis
Fascia renalis (of Gerota)
Ren sin.
V. splenica
Aorta
Flexura duodenojejunalis
Flexura sinistra coli (Flexura splenica coli) (*pulled medially*)
A. suprarenalis media
V. suprarenalis
A. suprarenalis inferior
A. and V. renalis sin.
Peritoneum (*cut edges*)

Abdominal exposure of left Glandula suprarenalis


Centrum tendineum diaphragmatis
Peritoneum parietale
Hepar
Omentum minus
V. portae hepatis and A. hepatica propria in right margin of Omentum minus
Bursa omentalis (lesser sac)
Gaster
A. colica media
Mesocolon transversum
Peritoneum parietale (of Paries anterior abdominis)
Colon transversum
Omentum majus
Intestinum tenue
M. rectus abdominis
Fascia transversalis
Lig. umbilicale medianum (obliterated Urachus)
Panniculus adiposus telae subcutaneae abdominis (Camper's fascia)
Stratum membranosum telae subcutaneae abdominis (Scarpa's fascia)
Vesica urinaria
Os pubis
Fascia penis (Buck's fascia)
Spatium retropubicum (Retzii)
Tunica vaginalis testis
Testis
M. puboanalis (M. puborectalis) (thickened medial edge of Levator ani)
Membrana perinei; Glandula bulbourethralis (Cowperi)
Lig. coronarium (enclosing Area nuda hepatis)
Oesophagus
Recessus superior bursae omentalis
Foramen omentale (Winslowii)
Truncus coeliacus
A. and V. splenica
A. and V. renalis
Pancreas
A. mesenterica superior
Pars inferior duodeni (Pars horizontalis) (2nd part)
Aorta abdominalis
Peritoneum parietale (of Paries posterior abdominis)
Mesenterium
Excavatio rectovesicalis
Rectum
Fascia rectoprostatica (of Denonvilliers)
Levator ani
Prostata
Pars profunda
Pars superficialis
Pars subcutanea
Sphincter externus ani
Mm. transversi perinei superficialis and profundus
M. bulbospongiosus
T10
T11
T12
L1
L2
L3
L4
L5
S1
S2
F. Netter M.D.
C. Machado M.D.

Abdominal and Pelvic Lymphatics: Schema


V. cava superior
Ductus thoracicus
Aorta
Diaphragma (*cut*)
Cisterna chyli
C. Machado M.D.

→ From upper rectum, colon sigmoideum, colon descendens and left half of colon transversum to Nodi lymphoidei mesenterici inferiores

→ From prostata (male) and uterus (female) to Nodi iliaci interni

→ From vesica urinaria to Nodi iliaci communes

→ From vagina to Nodi sacrales

→ From ovaria to Nodi iliaci externi

→ From glandulae suprarenales to Nodi mediastinales posteriores

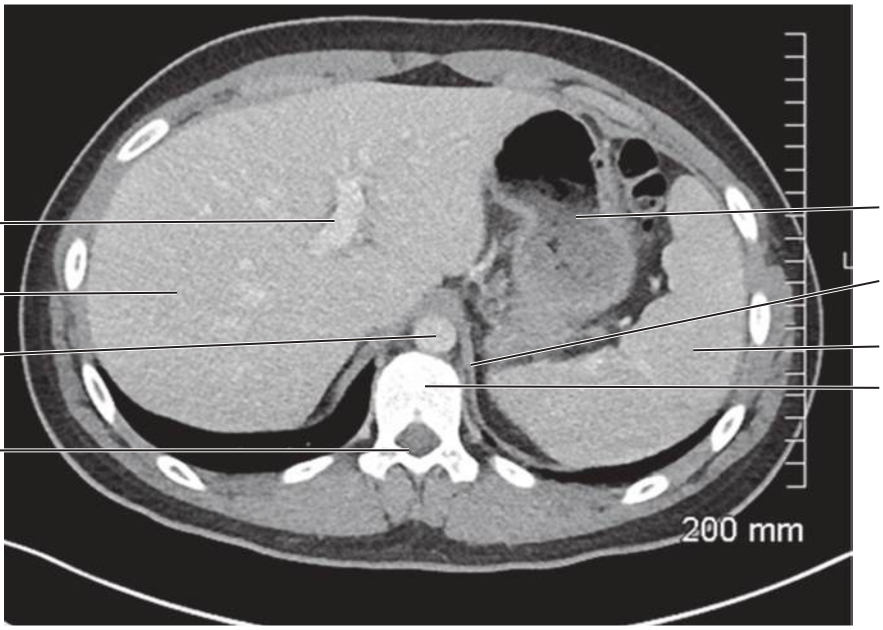
→ From hepar to Nodi phrenici inferiores

→ From hepar, vesica biliaris, duodenum, pancreas, and splen to Nodi coeliaci

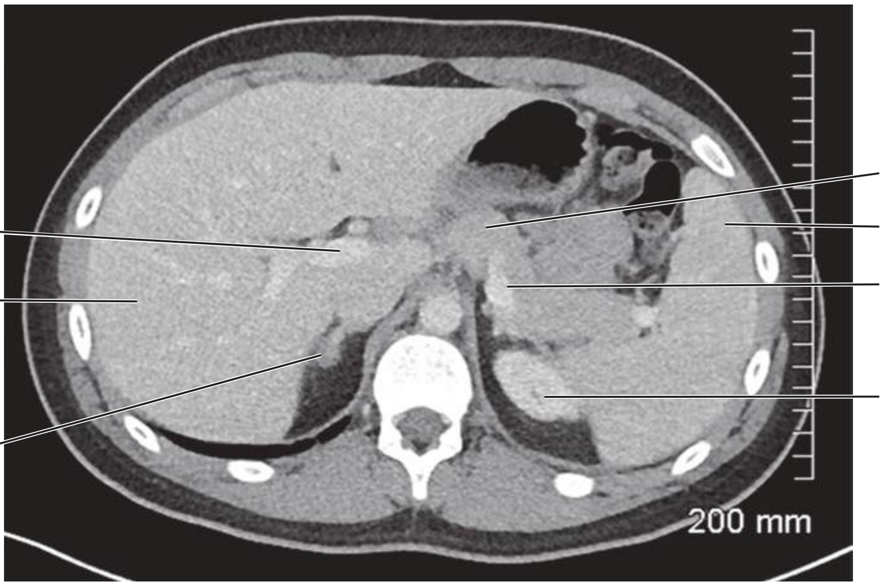
→ From caecum, colon ascendens, right half of colon transversum, jejunum, and ileum to Nodi mesenterici superiores

→ From renes, glandulae suprarenales, ureteres, testes (male), and ovaria (female) to Nodi lumbales

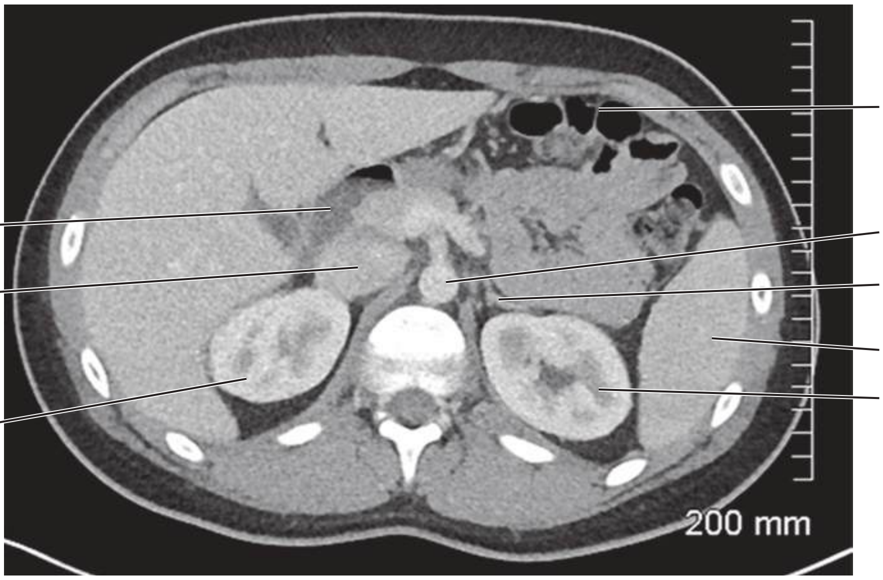
Axial CT image of abdomen with intravenous contrast enhancement


V. portae hepatis
Hepar
Aorta
Canalis vertebralis
Gaster
Crus sinistrum diaphragmatis
Splen
Corpus vertebrae
200 mm

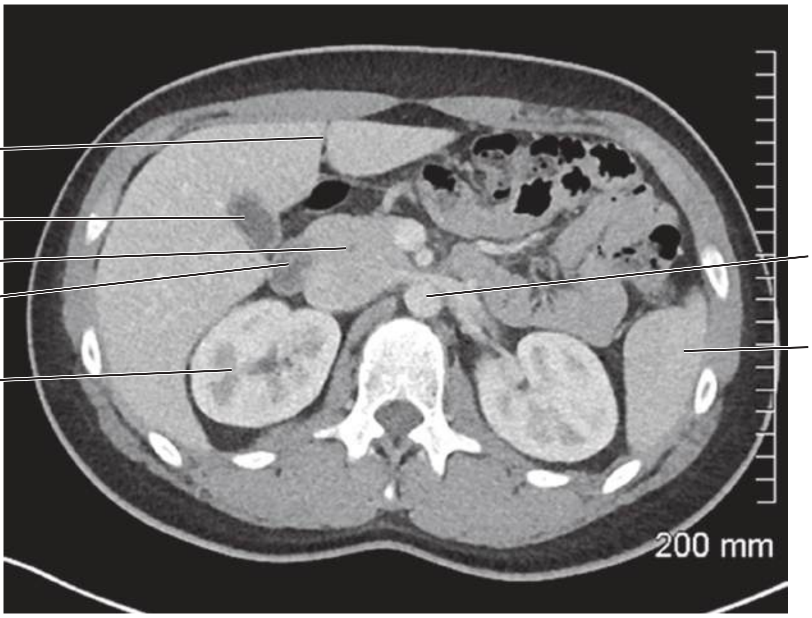
Axial CT image of upper abdomen with intravenous contrast enhancement


V. portae hepatis
Hepar
Glandula suprarenalis dex.
Corpus pancreatis
Splen
V. splenica
Glandula suprarenalis sin.
200 mm

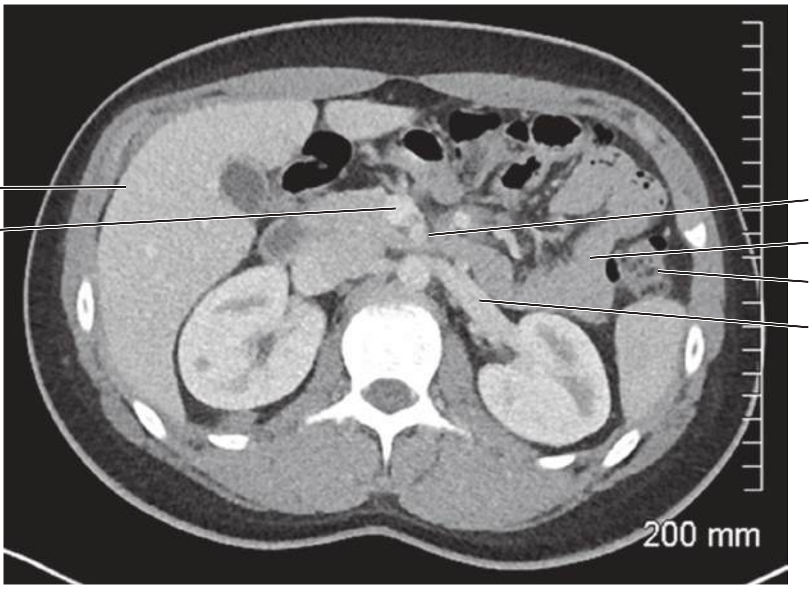
Axial CT image of midabdomen with intravenous contrast enhancement


Duodenum
V. cava inferior
Ren dex.
Flexura sinistra coli (Flexura splenica coli)
Aorta
Glandula suprarenalis sin.
Splen
Ren sin.
200 mm

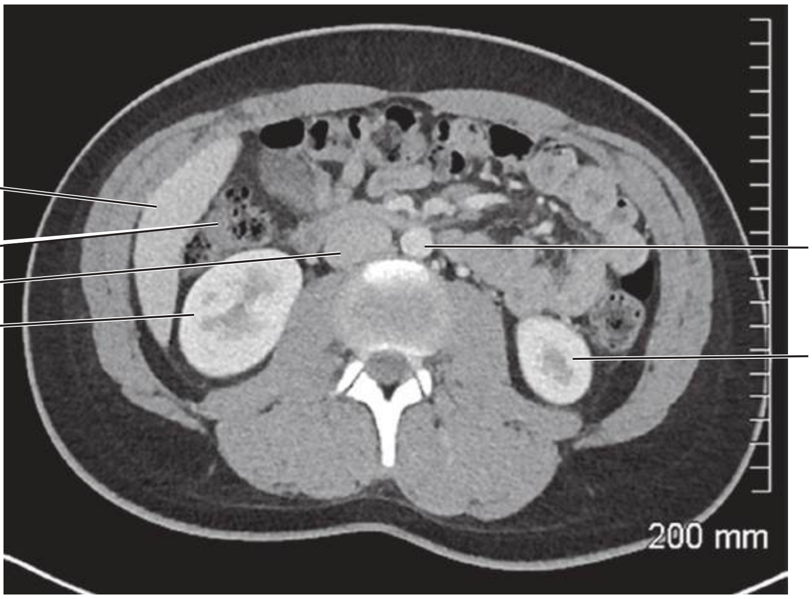
Axial CT image of midabdomen with intravenous contrast enhancement

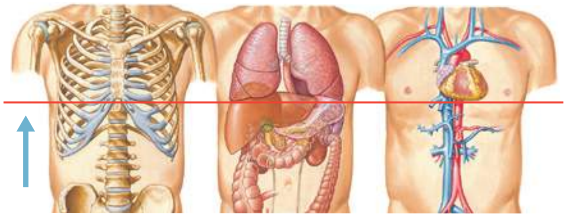

Lig. falciforme
Vesica biliaris
Caput pancreatis
Duodenum
Ren dex.
Aorta
Splen
200 mm

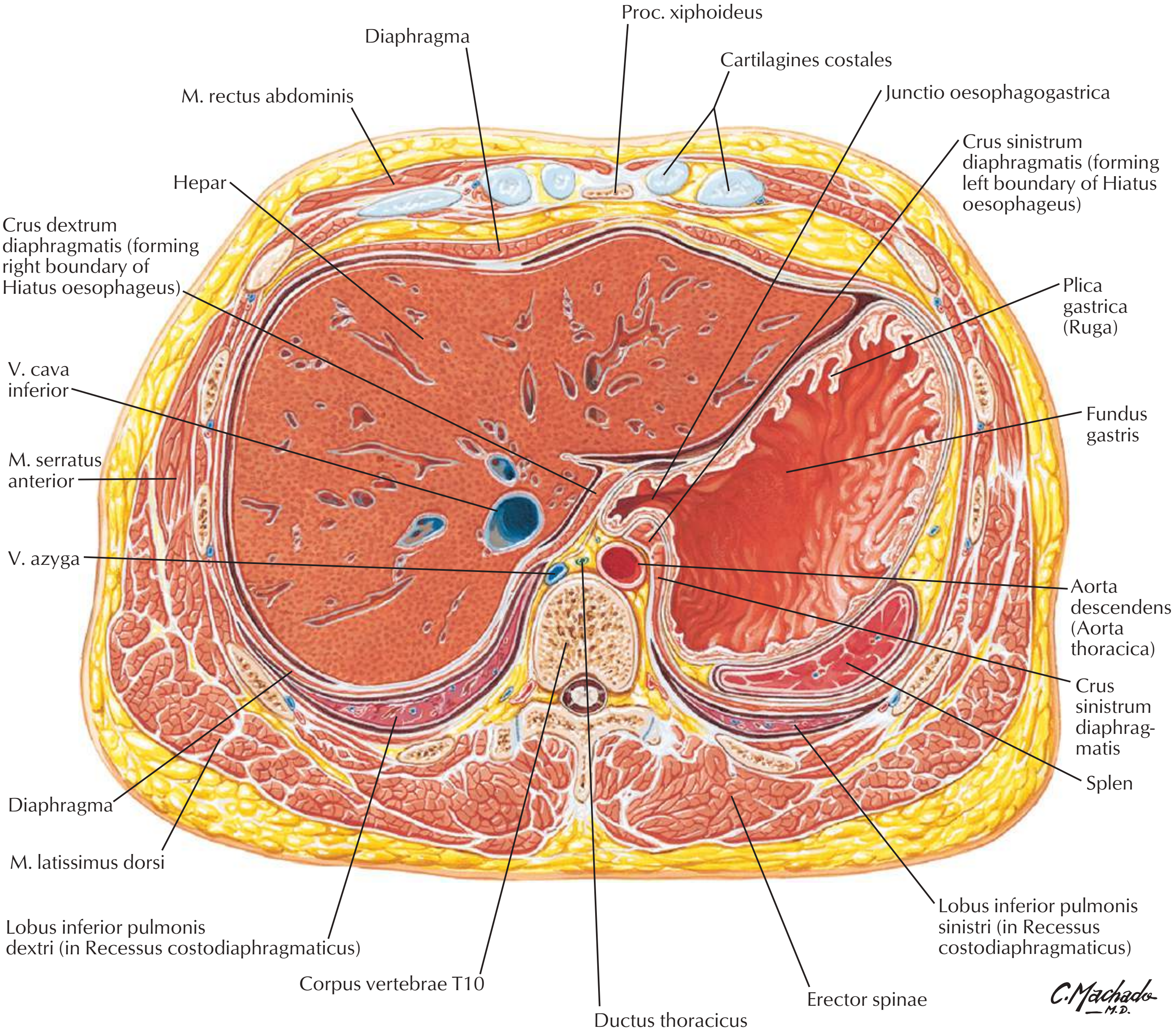
Axial CT image of abdomen with intravenous contrast enhancement


Hepar
V. mesenterica superior
A. mesenterica superior
Jejunum
Colon descendens
V. renalis sin.
200 mm

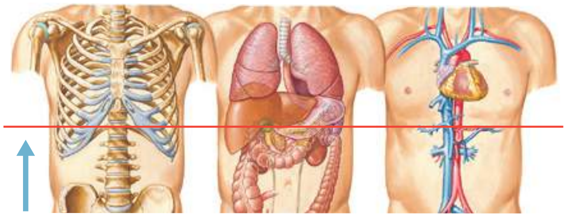
Axial CT image of abdomen with intravenous contrast enhancement

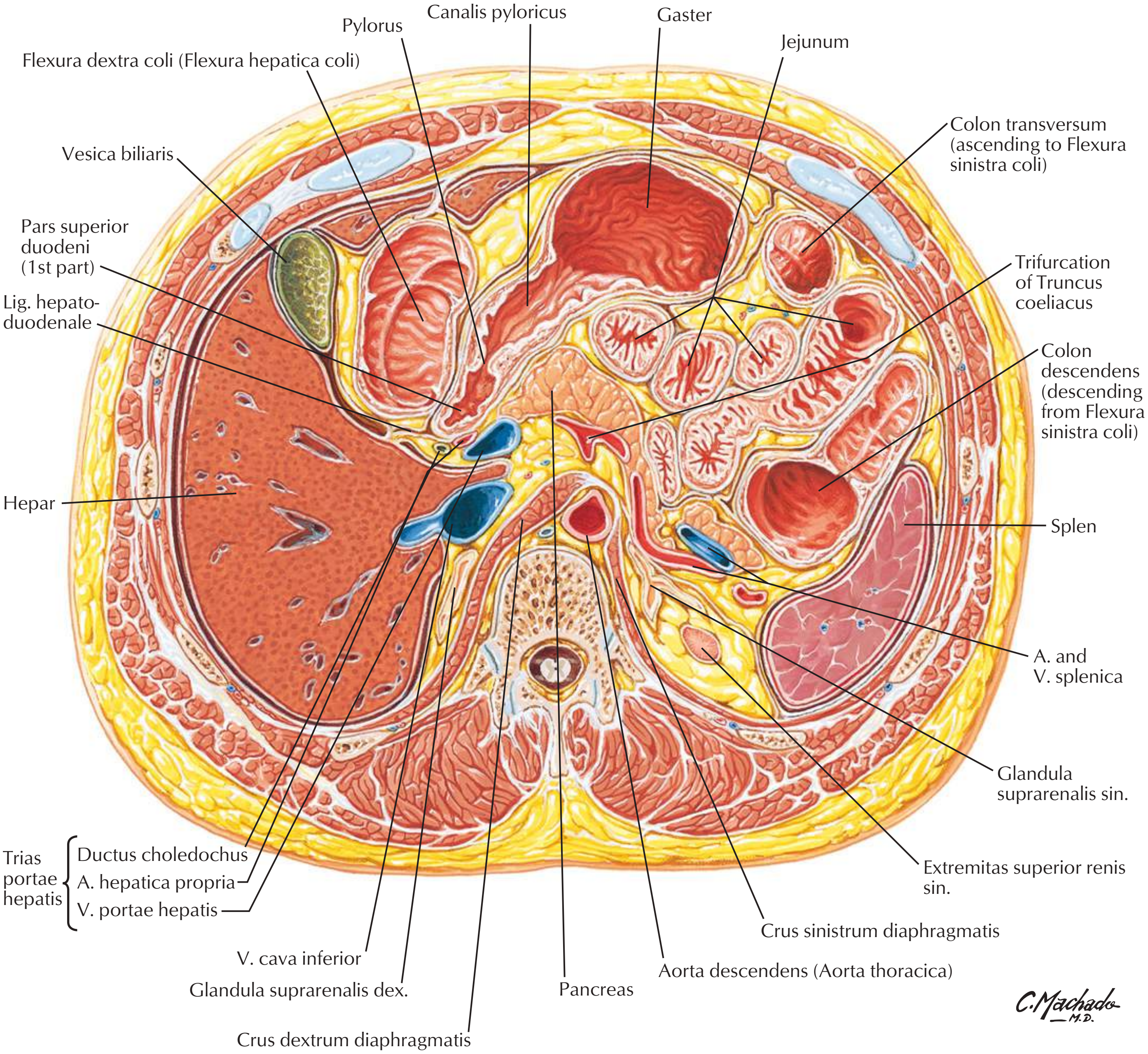

Lobus dexter hepatis
Flexura dextra coli
(Flexura hepatica coli)
V. cava inferior
Ren dex.
Aorta
Ren sin.
200 mm



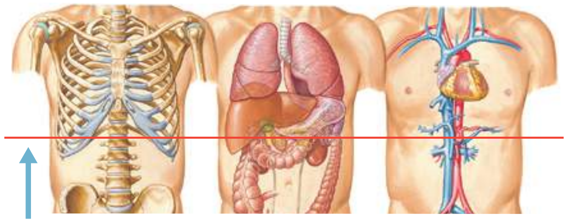

Proc. xiphoideus
Diaphragma
Cartilagines costales
M. rectus abdominis
Junctio oesophagogastrica
Crus sinistrum diaphragmatis (forming left boundary of Hiatus oesophageus)
Hepar
Crus dextrum diaphragmatis (forming right boundary of Hiatus oesophageus)
Plica gastrica (Ruga)
V. cava inferior
Fundus gastris
M. serratus anterior
V. azyga
Aorta descendens (Aorta thoracica)
Crus sinistrum diaphragmatis
Splen
Diaphragma
M. latissimus dorsi
Lobus inferior pulmonis sinistri (in Recessus costodiaphragmaticus)
Lobus inferior pulmonis dextri (in Recessus costodiaphragmaticus)
Corpus vertebrae T10
Erector spinae
Ductus thoracicus

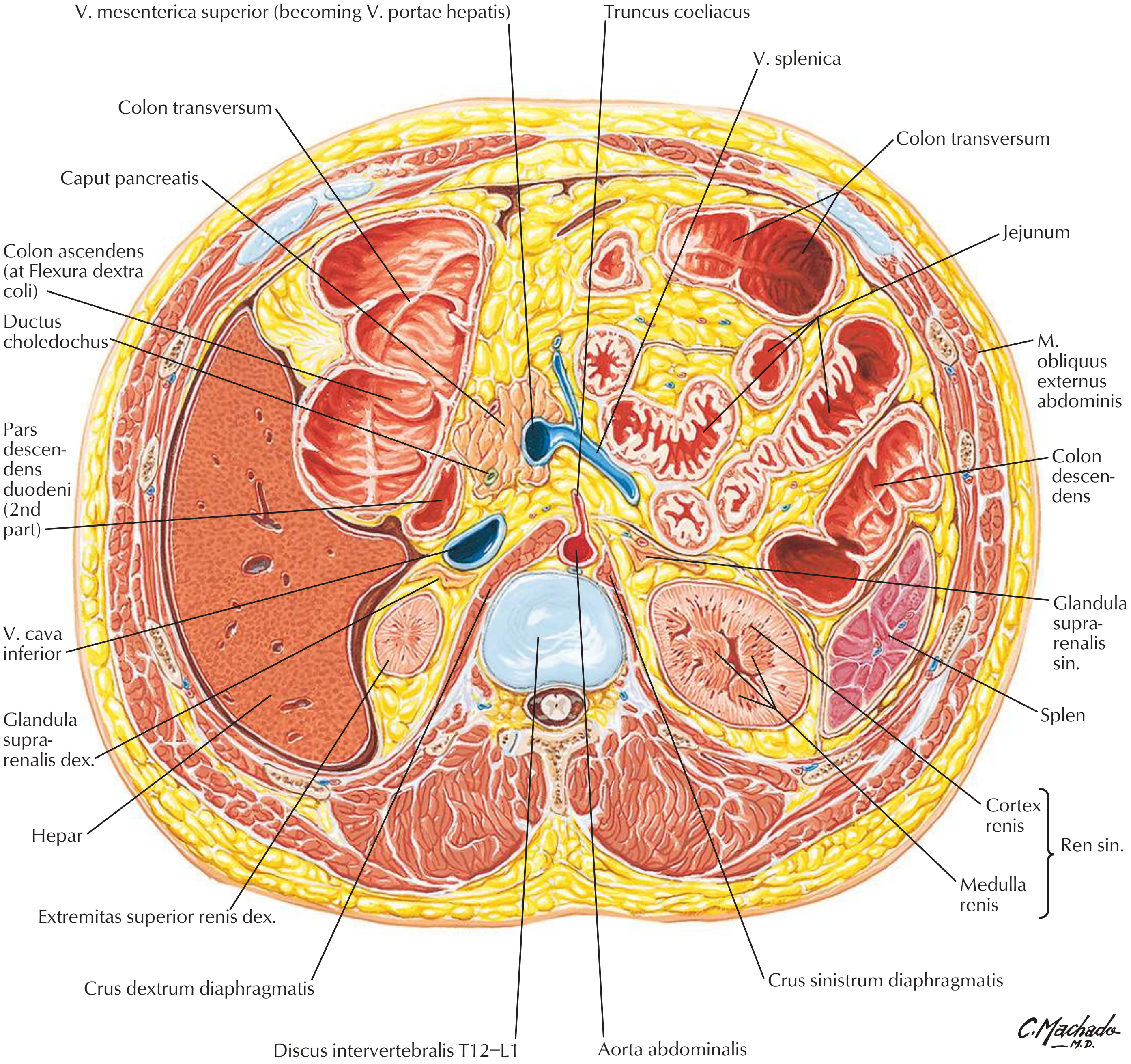
Cross Section at T12, Inferior to Xiphoid Process



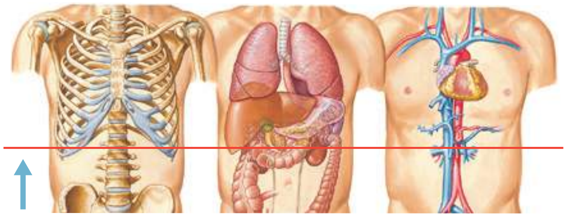

Pylorus
Canalis pyloricus
Gaster
Jejunum
Flexura dextra coli (Flexura hepatica coli)
Vesica biliaris
Colon transversum (ascending to Flexura sinistra coli)
Pars superior duodeni (1st part)
Trifurcation of Truncus coeliacus
Lig. hepato-duodenale
Colon descendens (descending from Flexura sinistra coli)
Hepar
Splen
A. and V. splenica
Glandula suprarenalis sin.
Extremitas superior renis sin.
Trias portae hepatis
Ductus choledochus
A. hepatica propria
V. portae hepatis
Crus sinistrum diaphragmatis
V. cava inferior
Aorta descendens (Aorta thoracica)
Glandula suprarenalis dex.
Pancreas
Crus dextrum diaphragmatis
C. Machado M.D.

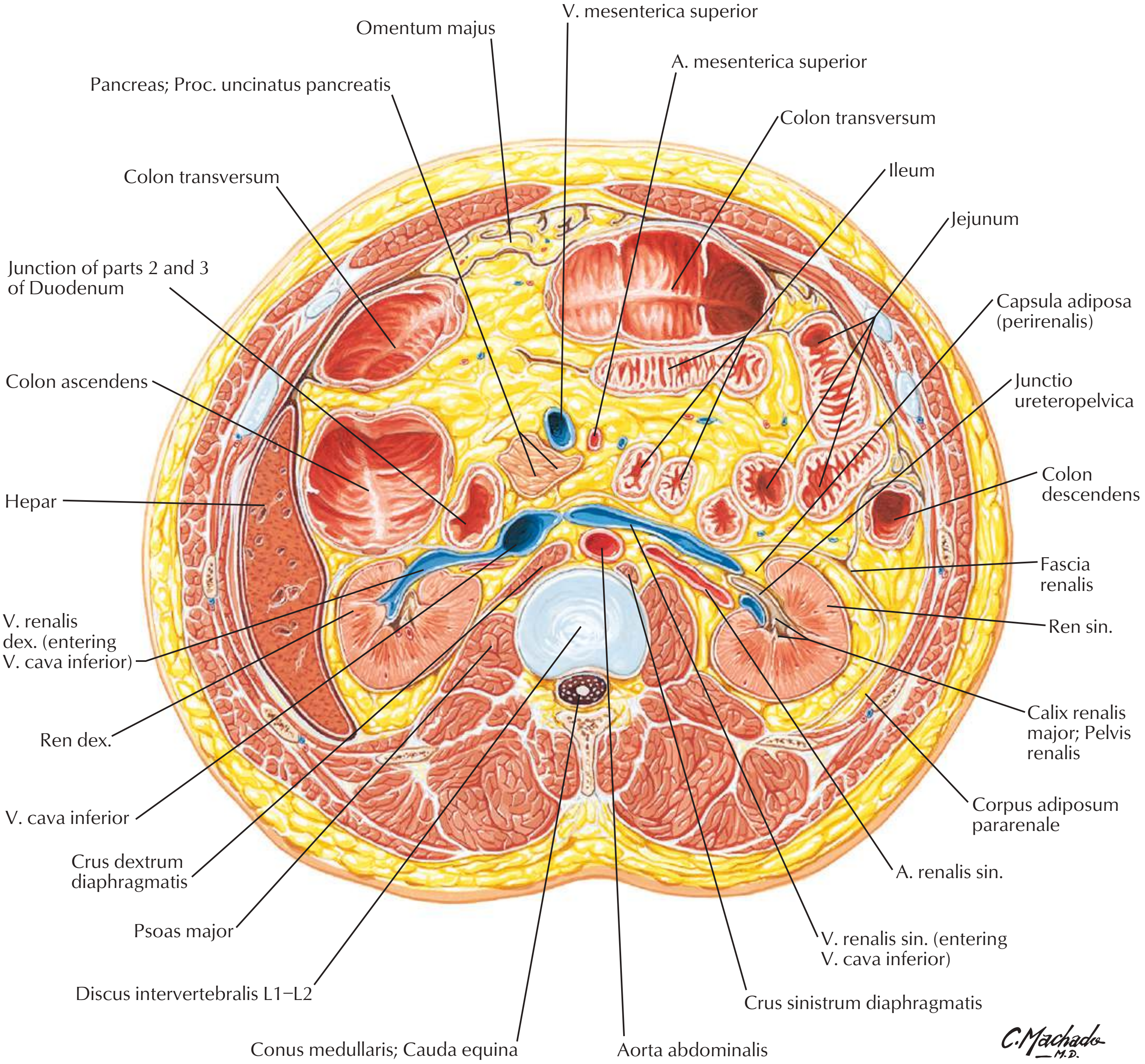
Cross Section at T12–L1, Intervertebral Disc

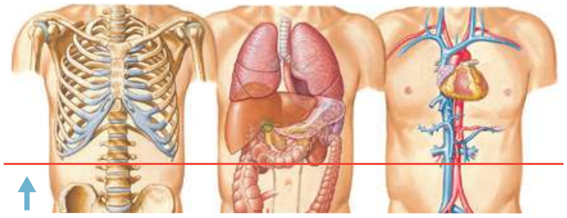


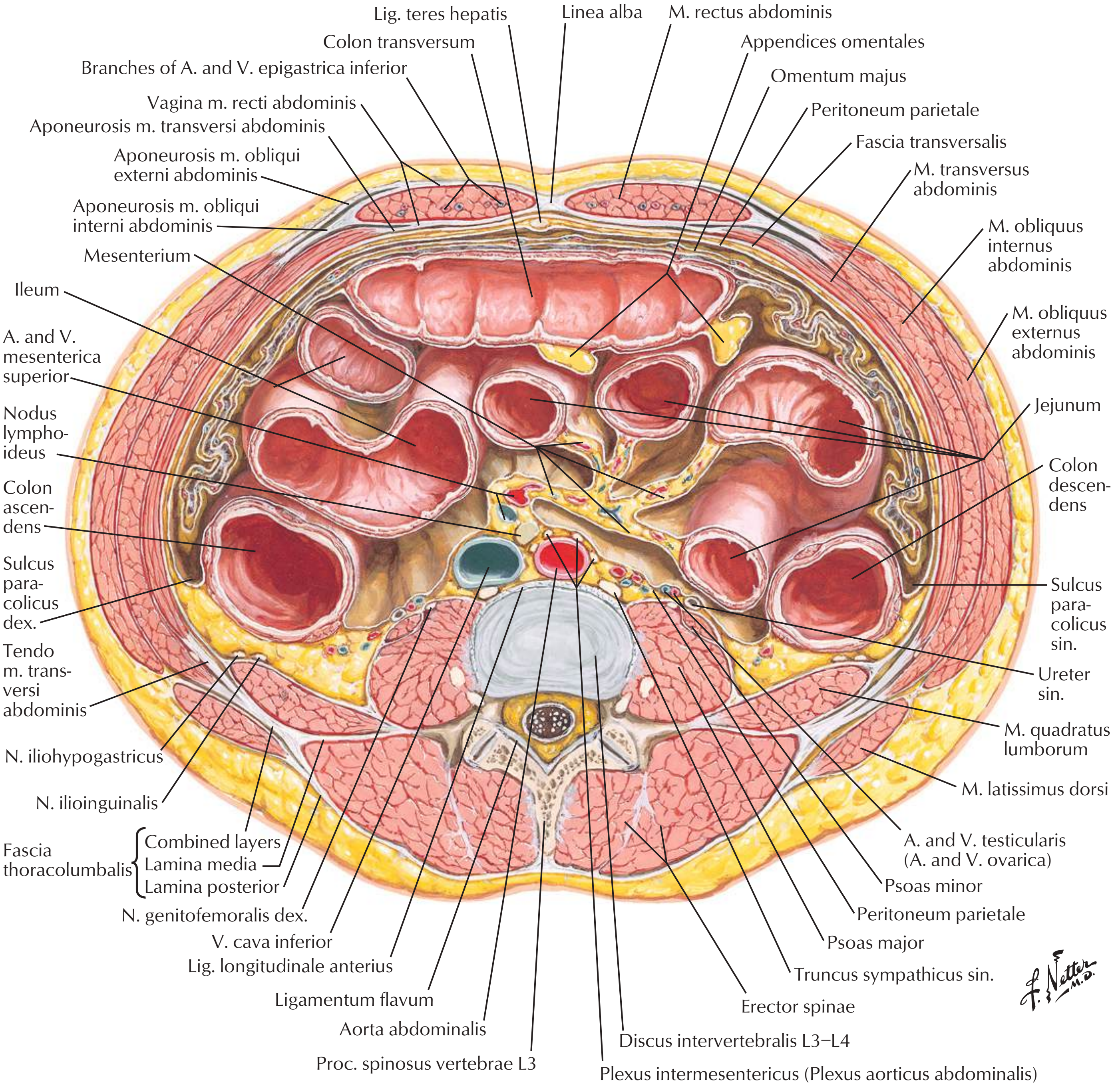

V. mesenterica superior (becoming V. portae hepatis)
Truncus coeliacus
V. splenica
Colon transversum
Colon transversum
Caput pancreatis
Jejunum
Colon ascendens (at Flexura dextra coli)
Ductus choledochus
M. obliquus externus abdominis
Pars descendens duodeni (2nd part)
Colon descendens
Glandula suprarenalis sin.
V. cava inferior
Glandula suprarenalis dex.
Splen
Hepar
Cortex renis
Ren sin.
Medulla renis
Extremitas superior renis dex.
Crus dextrum diaphragmatis
Crus sinistrum diaphragmatis
Discus intervertebralis T12–L1
Aorta abdominalis
C.Machado M.D.

Cross Section at L1–2, Intervertebral Disc




V. mesenterica superior
Omentum majus
A. mesenterica superior
Pancreas; Proc. uncinatus pancreatis
Colon transversum
Colon transversum
Ileum
Jejunum
Junction of parts 2 and 3 of Duodenum
Capsula adiposa (perirenalis)
Colon ascendens
Junctio ureteropelvica
Colon descendens
Hepar
Fascia renalis
V. renalis dex. (entering V. cava inferior)
Ren sin.
Calix renalis major; Pelvis renalis
Ren dex.
Corpus adiposum pararenale
V. cava inferior
Crus dextrum diaphragmatis
A. renalis sin.
Psoas major
V. renalis sin. (entering V. cava inferior)
Discus intervertebralis L1–L2
Crus sinistrum diaphragmatis
Conus medullaris; Cauda equina
Aorta abdominalis
C.Machado M.D.




Lig. teres hepatis
Linea alba
M. rectus abdominis
Colon transversum
Appendices omentales
Branches of A. and V. epigastrica inferior
Omentum majus
Vagina m. recti abdominis
Peritoneum parietale
Aponeurosis m. transversi abdominis
Fascia transversalis
Aponeurosis m. obliqui externi abdominis
M. transversus abdominis
Aponeurosis m. obliqui interni abdominis
M. obliquus internus abdominis
Mesenterium
Ileum
M. obliquus externus abdominis
A. and V. mesenterica superior
Jejunum
Nodus lymphoideus
Colon descendens
Colon ascendens
Sulcus paracolicus dex.
Sulcus paracolicus sin.
Tendo m. transversi abdominis
Ureter sin.
M. quadratus lumborum
N. iliohypogastricus
M. latissimus dorsi
N. ilioinguinalis
A. and V. testicularis (A. and V. ovarica)
Fascia thoracolumbalis
Combined layers
Lamina media
Lamina posterior
Psoas minor
Peritoneum parietale
N. genitofemoralis dex.
Psoas major
V. cava inferior
Truncus sympathicus sin.
Lig. longitudinale anterius
Ligamentum flavum
Erector spinae
Aorta abdominalis
Discus intervertebralis L3−L4
Proc. spinosus vertebrae L3
Plexus intermesentericus (Plexus aorticus abdominalis)
F. Netter M.D.

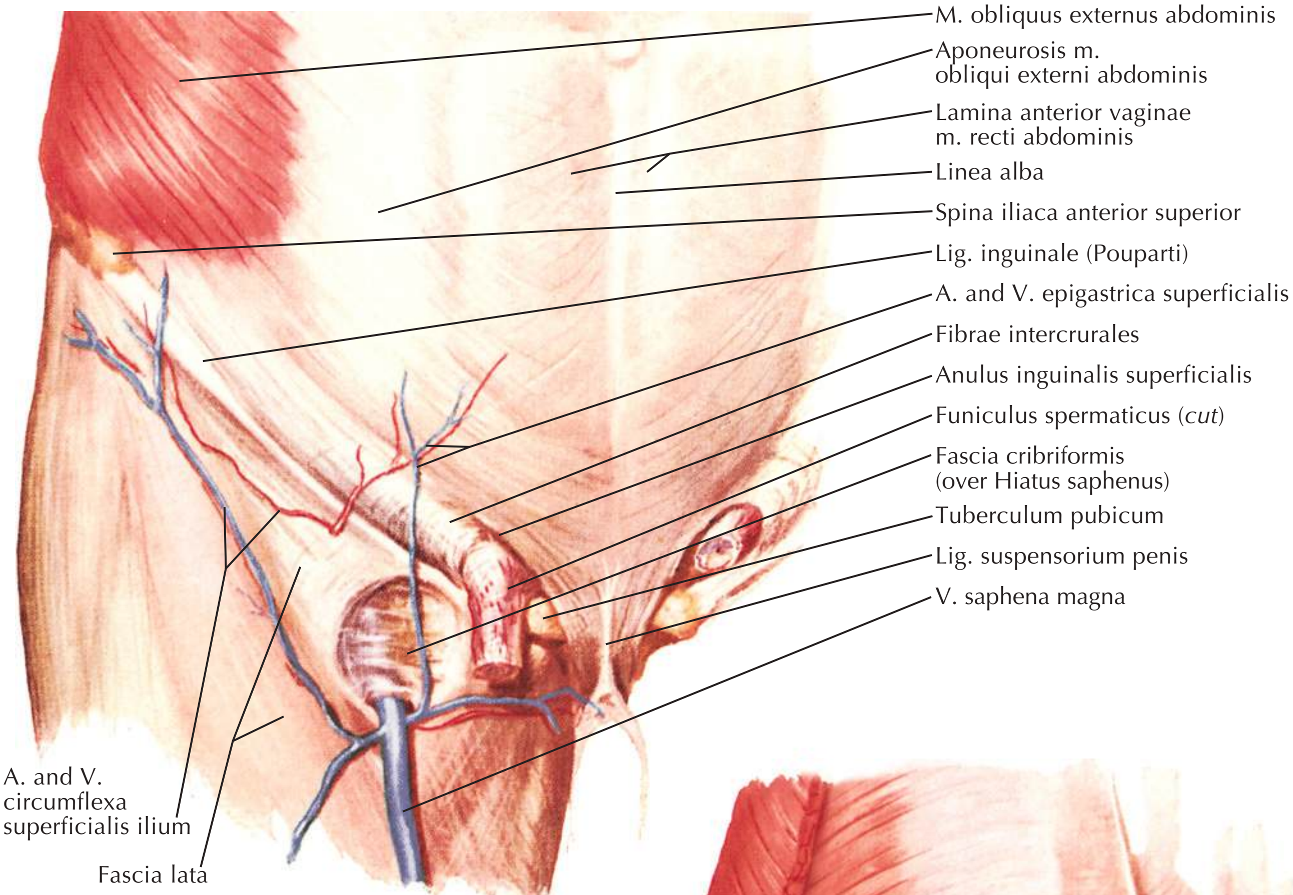
ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
INTEGUMENTUM COMMUNE		
Umbilicus	Landmark for locating transumbilical plane, which is used to divide abdomen into quadrants; marks position of T10 dermatome; used to locate McBurney's point; common site for hernias in abdominal wall	249, 251
SYSTEMA SKELETALE		
Processus xiphoideus; Symphysis pubica	Palpable landmarks used to locate median plane, which is used to divide abdomen into quadrants	249
Spina iliaca anterior superior (ASIS)	Palpable landmark used to locate McBurney's point; tenderness over McBurney's point is indication of appendicitis	250, 282
SYSTEMA MUSCULARE		
Linea alba	Site used for abdominal wall incisions because there is lack of significant neurovascular branches in this region	249, 254
Lig. inguinale	Surface landmark that marks division between abdominal wall and thigh	249, 253
Trigonum inguinale (Hesselbachii)	Weak area on anterior abdominal wall where abdominal contents may herniate, producing direct inguinal hernia	256, 262
Anulus inguinalis profundus	Opening on anterior abdominal wall where abdominal contents may herniate, producing indirect inguinal hernia	262, 263
Anulus femoralis	Opening medial to vasa iliaca externa where abdominal contents may herniate, producing femoral hernia	264
Hiatus oesophageus diaphragmatis	Widening of this opening allows stomach to protrude into mediastinum, causing gastroesophageal reflux	269, 271
SYSTEMA DIGESTORIUM		
Hepar	Palpable inferior to right costal margin	270, 276
Junctio gastrooesophagea	Transient relaxations or decreased tone of lower esophageal sphincter can cause gastric esophageal reflux disease (GERD)	277, 328
Gaster; Duodenum	Site of peptic ulcer formation	276, 277
Appendix vermiformis	Prone to inflammation and rupture	280, 282
Colon	Common site of diverticula; colonoscopy is performed to screen for colon cancer	283
Vesica biliaris	Palpable at junction of right costal margin and midclavicular line; may become inflamed (cholecystitis) and cause pain; gallstones can block biliary ducts	284, 309
SYSTEMA URINARIUM		
Ren	Maintain fluid and electrolyte balance; may develop renal calculi (kidney stones)	314
SYSTEMA ENDOCRINUM		
Pancreas	Due to its retroperitoneal position, pain from pancreas is typically referred to the back; cancer of caput pancreatis can compress ductus choledochus	288, 310

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA NERVOSUM		
Nn. ilioinguinalis and genitofemoralis	Mediate cremasteric reflex, which tests integrity of N. spinalis L1	269
Nn. intercostales, subcostalis, and iliohypogastricus	Convey well-localized pain sensations from abdominal wall and peritoneum parietale; pain in dermatomal distribution indicates problem with Nn. spinales (e.g., herpes zoster infection)	260
Plexus (nervosus) renalis	Medically resistant hypertension can be treated in some patients by denervating sympathetic fibers traveling along Aa. renales	300, 321
Ganglion coeliacum	Some patients with medically intractable pain from chronic pancreatitis undergo celiac ganglion block	301, 310
Nn. splanchnici sympathici	Convey pain sensations from abdominal viscera that are often referred to other sites; quadrant in which pain is located and site of radiation provide clues to source of pain	303, 306
N. iliohypogastricus	Nephrectomy through M. quadratus lumborum can damage N. iliohypogastricus, with resultant anesthesia above os pubis	312
SYSTEMA CARDIOVASCULARE		
Anastomoses arteriosae parietis anterioris abdominis	Anastomosis between Aa. epigastricae and Aa. thoracicae internae, and between Aa. circumflexae and Aa. intercostales and thoracicae laterales	258
Anastomoses venosae parietis anterioris abdominis	Anastomosis between Vv. epigastricae and Vv. thoracicae internae, and between Vv. circumflexae and thoracoepigastricae and Vv. thoracicae laterales	259
Vv. paraumbilicales	May become dilated in patients with portal hypertension, producing caput medusa	259, 299
A. cystica	Ligated during cholecystectomy	291
A. mesenterica superior	May compress pars inferior duodeni in thin patient or patient who has recently lost a lot of weight	291, 294
Aa. intestinales	Areas without significant collateral circulation between major vessels (watershed areas) are at risk for ischemia	294, 295
Anastomoses a. marginalis coli	A. marginalis coli connects Aa. colicae dextra, media, and sinistra, providing important anastomosis for collateral circulation	295
Vv. oesophageae	May become dilated with portal hypertension, resulting in esophageal varices	296, 299
V. portae hepatis	Reduced blood flow through liver (e.g., due to cirrhosis) may produce portal hypertension and dilation of tributaries of V. portae hepatis; blood may return to heart at sites of portosystemic anastomosis	298, 299
V. rectalis superior	Has anastomoses with systemic Vv. rectales that may become dilated with portal hypertension	298, 299
Pars abdominalis aortae	Common site for aneurysm in abdomen, especially inferior to Aa. renales	317
SYSTEMA LYMPHATICUM		
Splen (Lien)	May be ruptured by fracture of ribs 9 to 11; splenic enlargement is assessed by palpation	273, 289

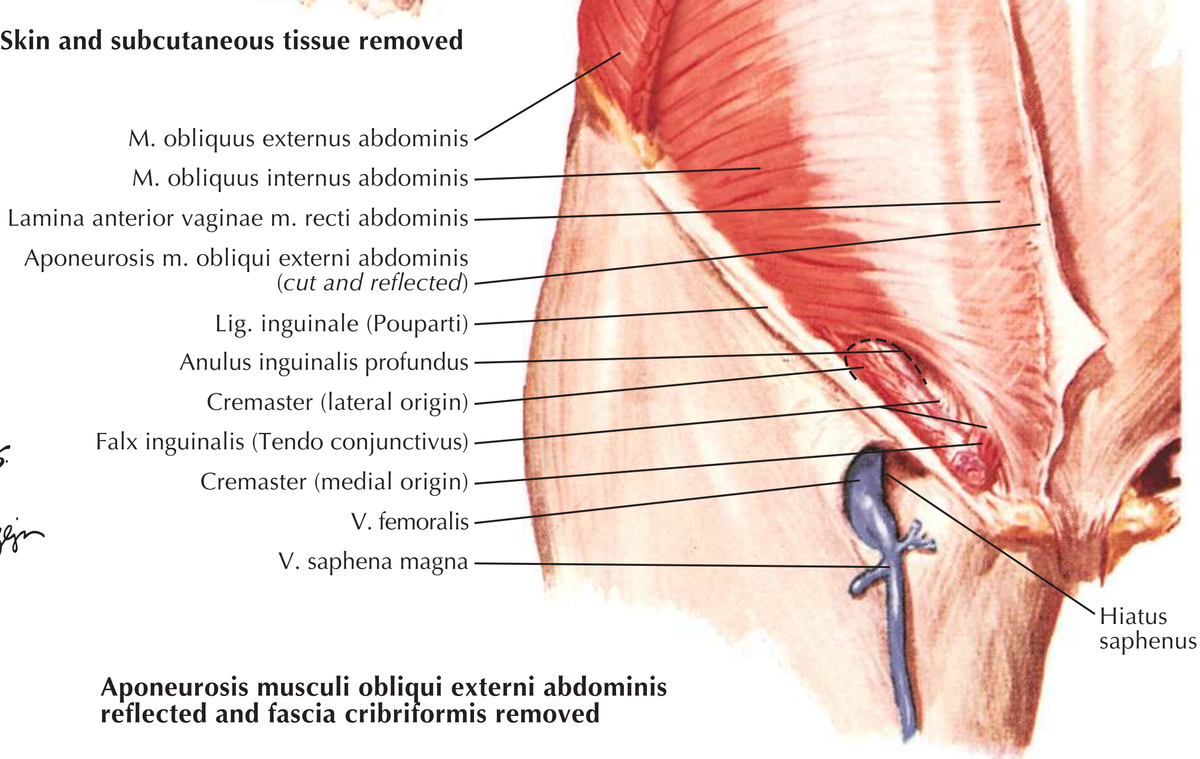
*Selections were based largely on clinical data as well as commonly covered clinical correlations in gross anatomy courses.

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Diaphragma	Paries posterior abdominis	Proc. xiphoideus; Cartilagines costales 7-12; Vertebrae L1–L3	Centrum tendineum diaphragmatis	N. phrenicus	Aa. pericardiacophrenica, musculophrenica, and phrenicae superiores and inferior	Draws central tendon down and forward during inspiration
M. iliacus	Paries posterior abdominis	Superior 2/3 of fossa iliaca; Ala ossis sacri; Ligg. sacroiliaca anteriora	Trochanter minor ossis femoris and corpus ossis femoris inferior to it, and to tendo psoae majoris	N. femoralis	Rr. iliaci a. iliolumbalis	Flexes hip and stabilizes hip joint; acts with psoas major
M. obliquus externus abdominis	Paries anterior abdominis	Facies externae costarum 5–12	Linea alba; Tuberculum pubicum; Anterior half of crista iliaca	Rr. anteriores nn. thoracicorum (T7-T12)	Aa. epigastricae superior and inferior	Compresses and supports abdominal viscera, flexes and rotates trunk
M. obliquus internus abdominis	Paries anterior abdominis	Fascia thoracolumbalis; Anterior 2/3 of crista iliaca; Lateral half of lig. inguinale	Margines inferiores costarum 10–12; Linea alba; Os pubis via falx inguinalis	Rr. anteriores nn. thoracicorum (T7-12) and lumbalis (L1)	Aa. epigastricae superior and inferior, and circumflexa iliaca profunda	Compresses and supports abdominal viscera, flexes and rotates trunk
Psoas major	Paries posterior abdominis	Procc. transversi vertebrarum lumbalium; Sides of corpora vertebrarum T12–L5; Intervening disci intervertebrales	Trochanter minor ossis femoris	Rr. anteriores nn. lumbalium (L1-L3)	Rr. lumbales a. iliolumbalis	Acting superiorly with iliacus, flexes hip; acting inferiorly, flexes vertebral column laterally; used to balance trunk in sitting position; acting inferiorly with iliacus, flexes trunk
Psoas minor	Paries posterior abdominis	Vertebral margins of vertebrae T12–L1; Corresponding discus intervertebralis	Pecten ossis pubis; Eminentia iliopubica	R. anterior n. lumbalis (L1)	R. lumbalis a. iliolumbalis	Flexes pelvis on vertebral column
M. pyramidalis	Paries anterior abdominis	Corpus ossis pubis, anterior to m. rectus abdominis	Linea alba	N. iliohypogastricus	A. epigastrica inferior	Tenses linea alba
M. quadratus lumborum	Paries posterior abdominis	Medial half of margo inferior costae 12; Tips of procc. transversi vertebrarum lumbalium	Lig. iliolumbale; Labium internum cristae iliacae	Rr. anteriores nn. thoracici (T12) and lumbalium (L1-L4)	A. iliolumbalis	Extends and laterally flexes vertebral column, fixes 12th rib during inspiration
M. rectus abdominis	Paries anterior abdominis	Symphysis pubica; Crista pubica	Proc. xiphoideus; Cartilagines costales 5–7	Rr. anteriores nn. thoracicorum (T7-T12)	Aa. epigastricae superior and inferior	Flexes trunk, compresses abdominal viscera
M. transversus abdominis	Paries anterior abdominis	Facies internae cartilaginum costalium 7–12; Fascia thoracolumbalis; Crista iliaca; Lateral third of lig. inguinale	Linea alba with aponeurosis m. obliqui interni abdominis; Crista pubica, and Pecten ossis pubis via falx inguinalis	Rr. anteriores nn. thoracicorum (T7-T12) and lumbalis (L1)	Aa. circumflexa iliaca profunda and epigastrica inferior	Compresses and supports abdominal viscera

Variations in spinal nerve contributions to the innervation of muscles, their arterial supply, their attachments, and their actions are common themes in human anatomy. Therefore, expect differences between texts and realize that anatomical variation is normal.

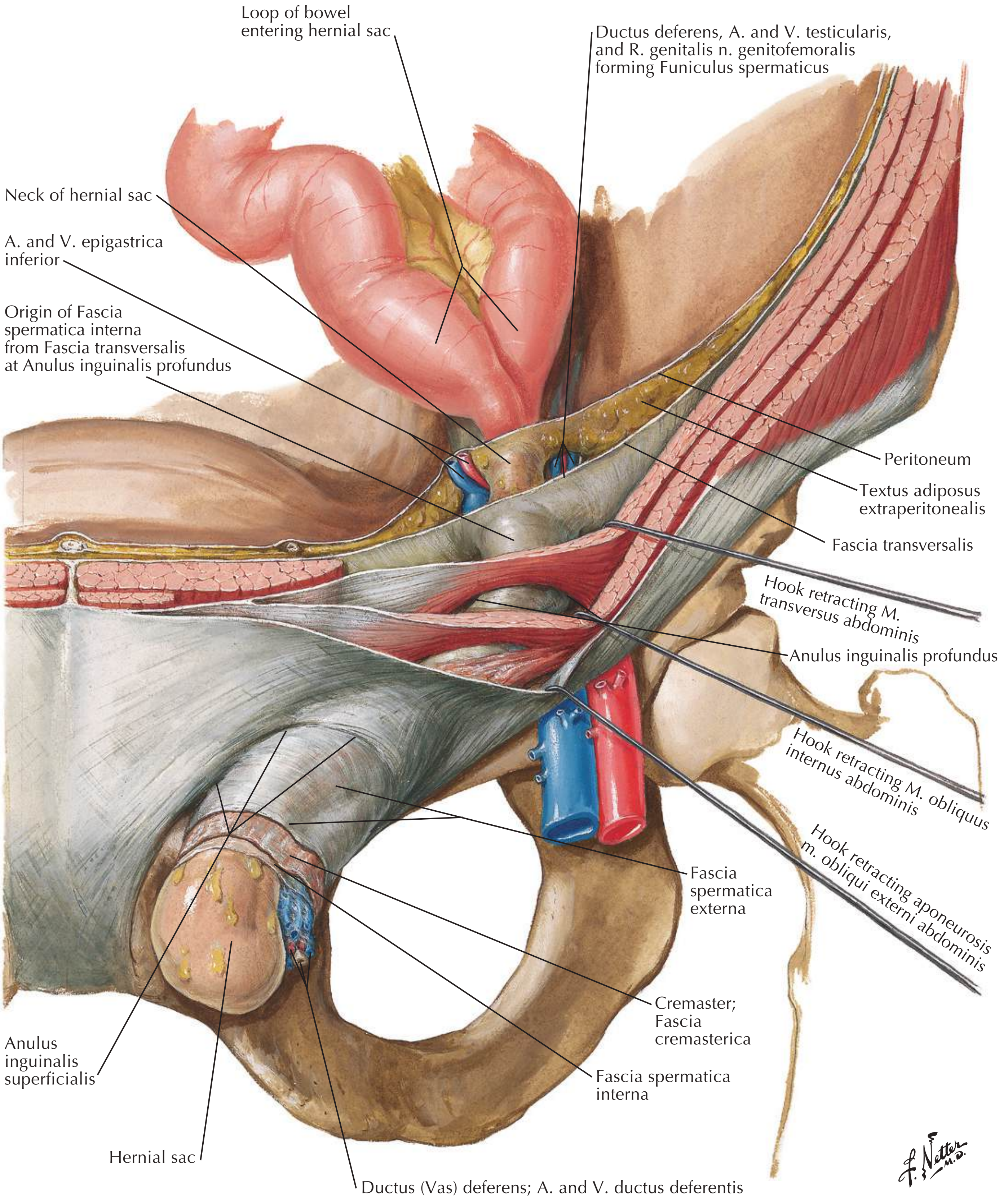

M. obliquus externus abdominis
Aponeurosis m. obliqui externi abdominis
Lamina anterior vaginae m. recti abdominis
Linea alba
Spina iliaca anterior superior
Lig. inguinale (Pouparti)
A. and V. epigastrica superficialis
Fibrae intercrurales
Anulus inguinalis superficialis
Funiculus spermaticus (*cut*)
Fascia cribriformis (over Hiatus saphenus)
Tuberculum pubicum
Lig. suspensorium penis
V. saphena magna
A. and V. circumflexa superficialis ilium
Fascia lata

Skin and subcutaneous tissue removed

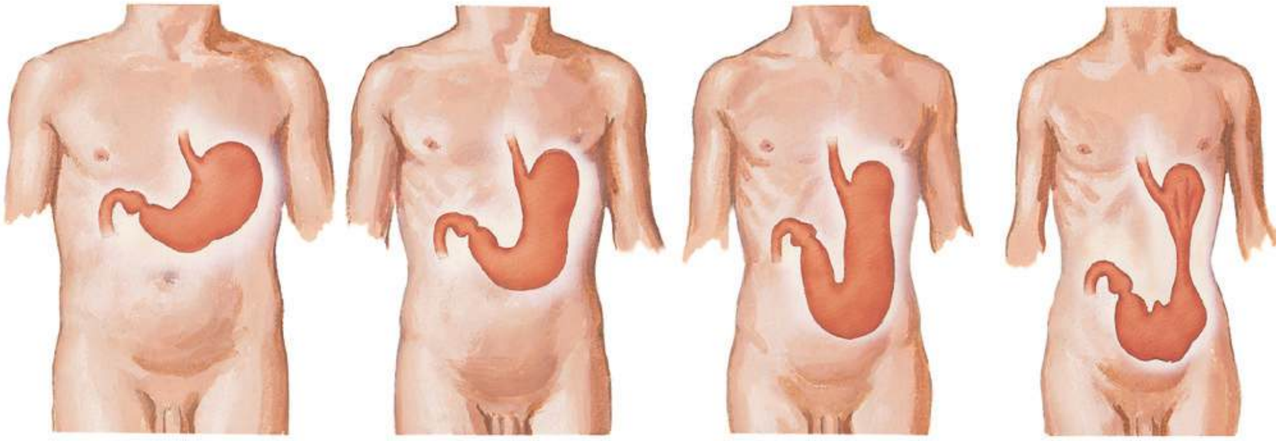

M. obliquus externus abdominis
M. obliquus internus abdominis
Lamina anterior vaginae m. recti abdominis
Aponeurosis m. obliqui externi abdominis (*cut and reflected*)
Lig. inguinale (Pouparti)
Anulus inguinalis profundus
Cremaster (lateral origin)
Falx inguinalis (Tendo conjunctivus)
Cremaster (medial origin)
V. femoralis
V. saphena magna
Hiatus saphenus

F. Netter M.D.
K. Marzejon

Aponeurosis musculi obliqui externi abdominis reflected and fascia cribriformis removed


Loop of bowel entering hernial sac
Ductus deferens, A. and V. testicularis, and R. genitalis n. genitofemoralis forming Funiculus spermaticus
Neck of hernial sac
A. and V. epigastrica inferior
Origin of Fascia spermatica interna from Fascia transversalis at Anulus inguinalis profundus
Peritoneum
Textus adiposus extraperitonealis
Fascia transversalis
Hook retracting M. transversus abdominis
Anulus inguinalis profundus
Hook retracting M. obliquus internus abdominis
Hook retracting aponeurosis m. obliqui externi abdominis
Fascia spermatica externa
Cremaster; Fascia cremasterica
Fascia spermatica interna
Anulus inguinalis superficialis
Hernial sac
Ductus (Vas) deferens; A. and V. ductus deferentis

Variations in position and contour of stomach in relation to body habitus

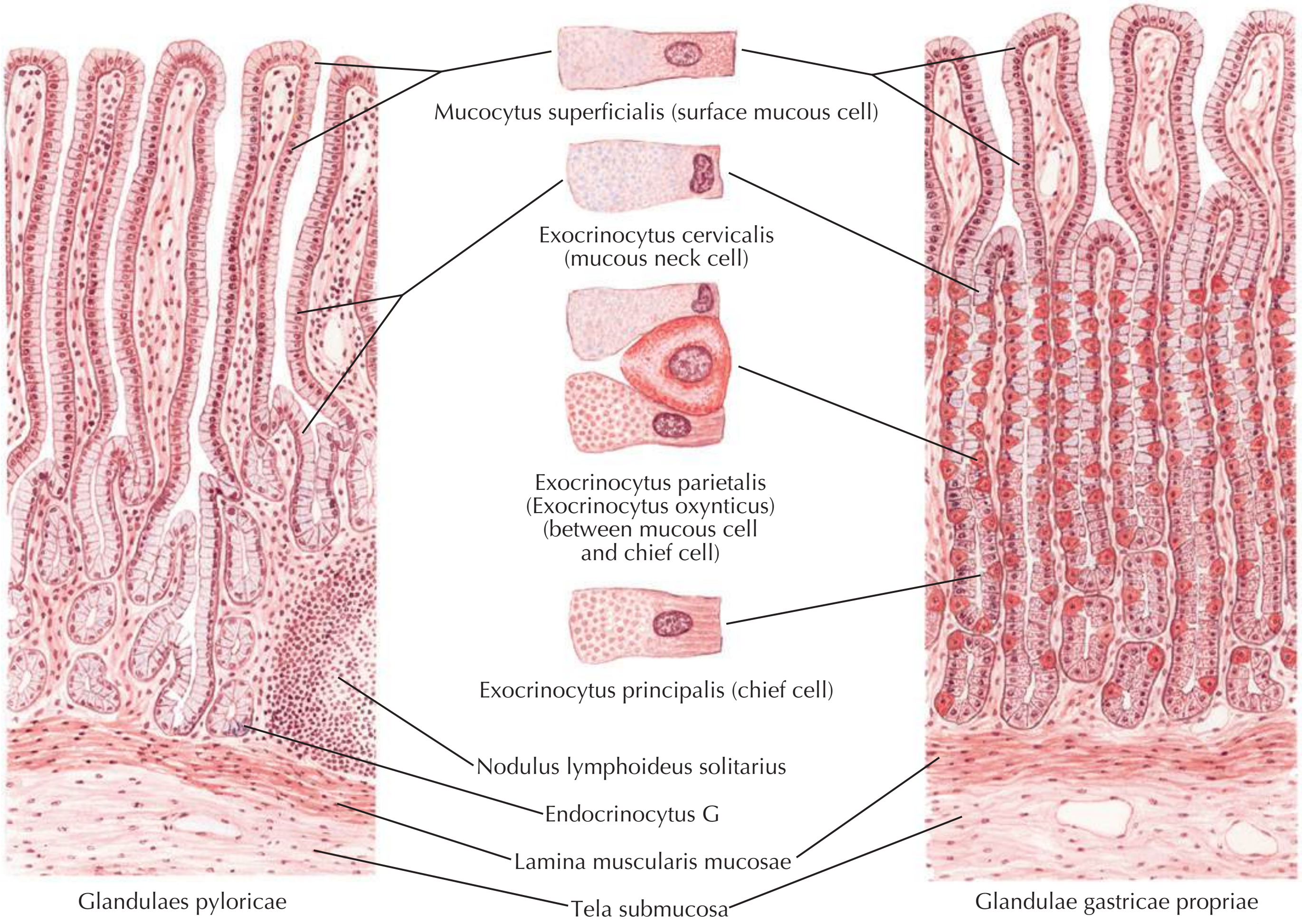


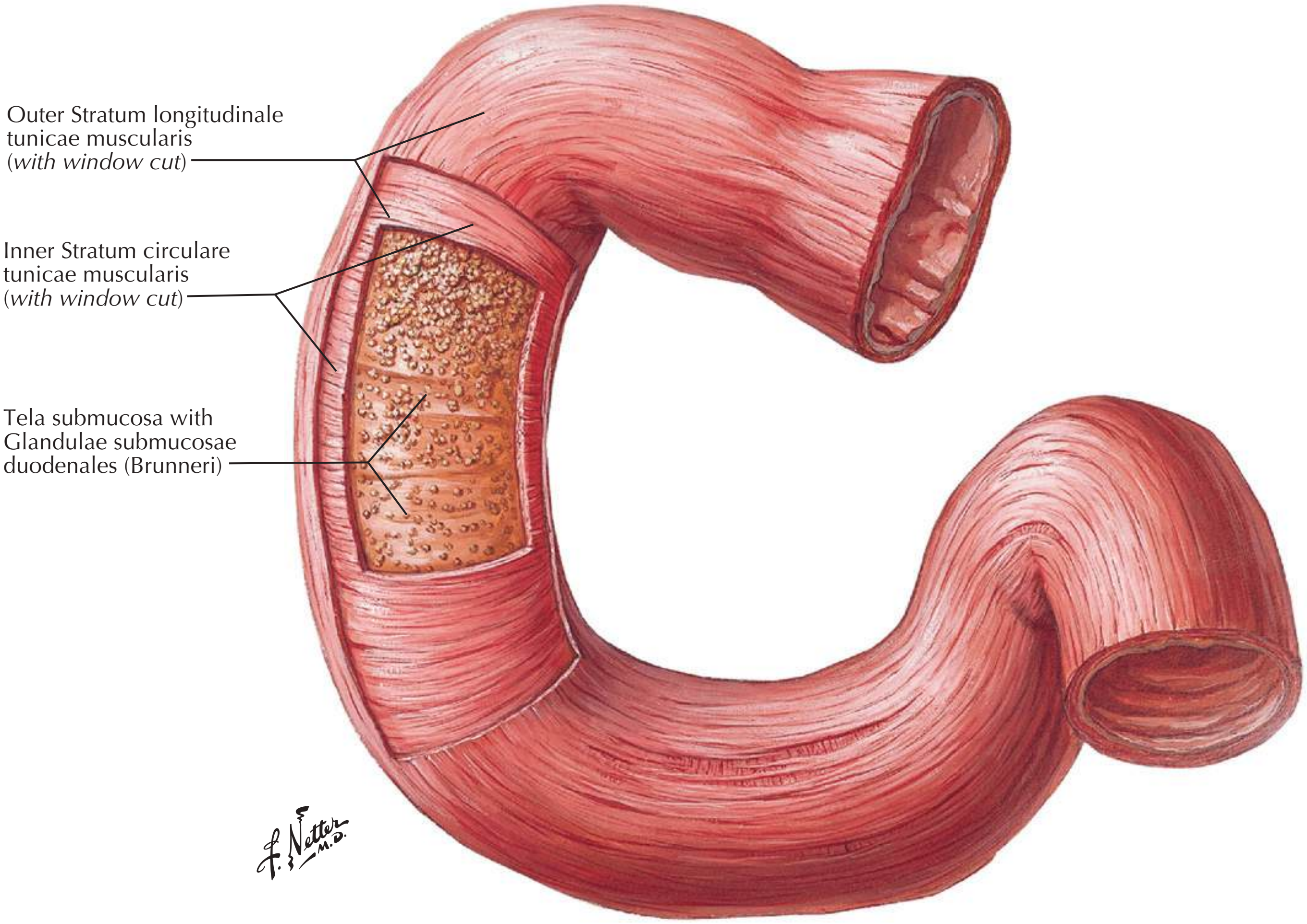
Hypertonic stomach

Orthotonic stomach

Hypotonic stomach

Atonic stomach


Mucocytus superficialis (surface mucous cell)
Exocrinocytus cervicalis
(mucous neck cell)
Exocrinocytus parietalis
(Exocrinocytus oxynticus)
(between mucous cell
and chief cell)
Exocrinocytus principalis (chief cell)
Nodulus lymphoideus solitarius
Endocrinocytus G
Lamina muscularis mucosae
Tela submucosa
Glandulaes pyloricae
Glandulae gastricae propriae


Outer Stratum longitudinale
tunicae muscularis
(*with window cut*)
Inner Stratum circulare
tunicae muscularis
(*with window cut*)
Tela submucosa with
Glandulae submucosae
duodenales (Brunneri)
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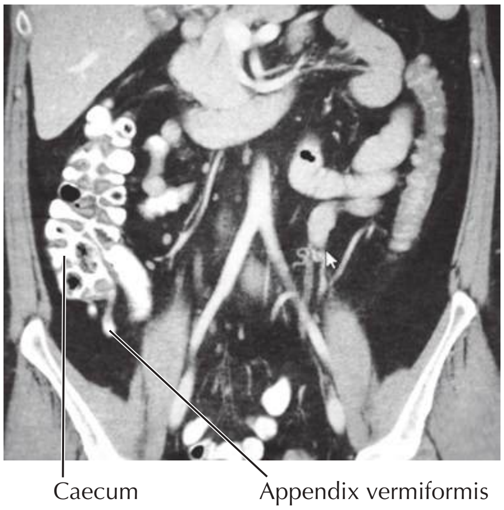
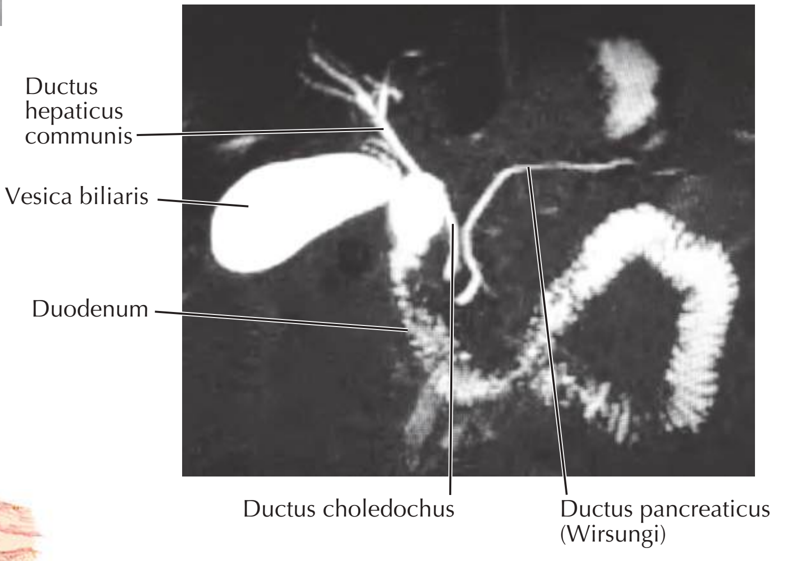
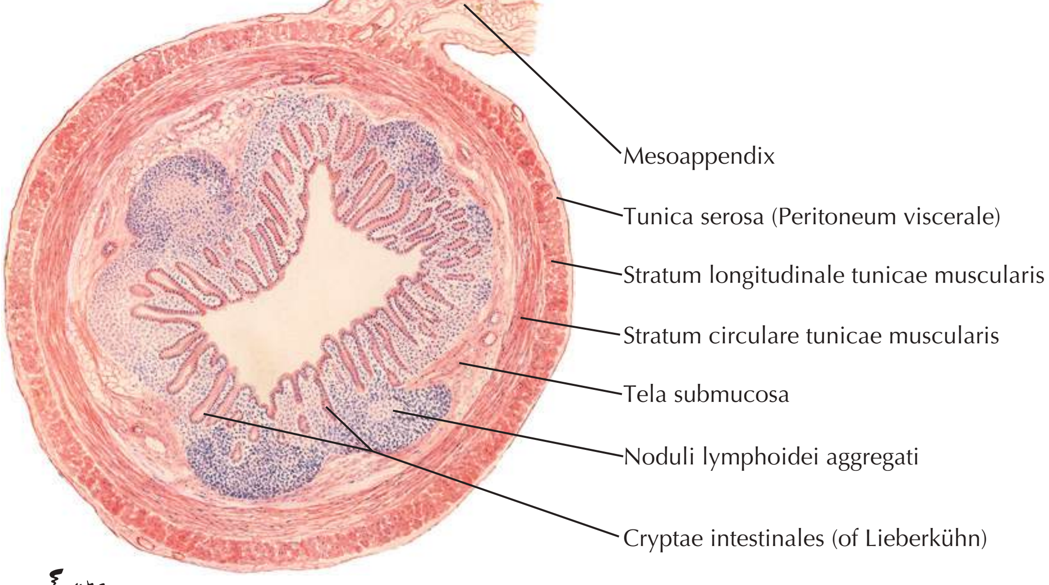
Coronal CT image with contrast


Caecum
Appendix vermiformis

Magnetic resonance cholangiopancreatography (MRCP)


Ductus hepaticus communis
Vesica biliaris
Duodenum
Ductus choledochus
Ductus pancreaticus (Wirsungi)


Mesoappendix
Tunica serosa (Peritoneum viscerale)
Stratum longitudinale tunicae muscularis
Stratum circulare tunicae muscularis
Tela submucosa
Noduli lymphoidei aggregati
Cryptae intestinales (of Lieberkühn)

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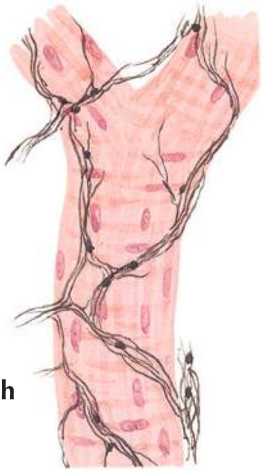
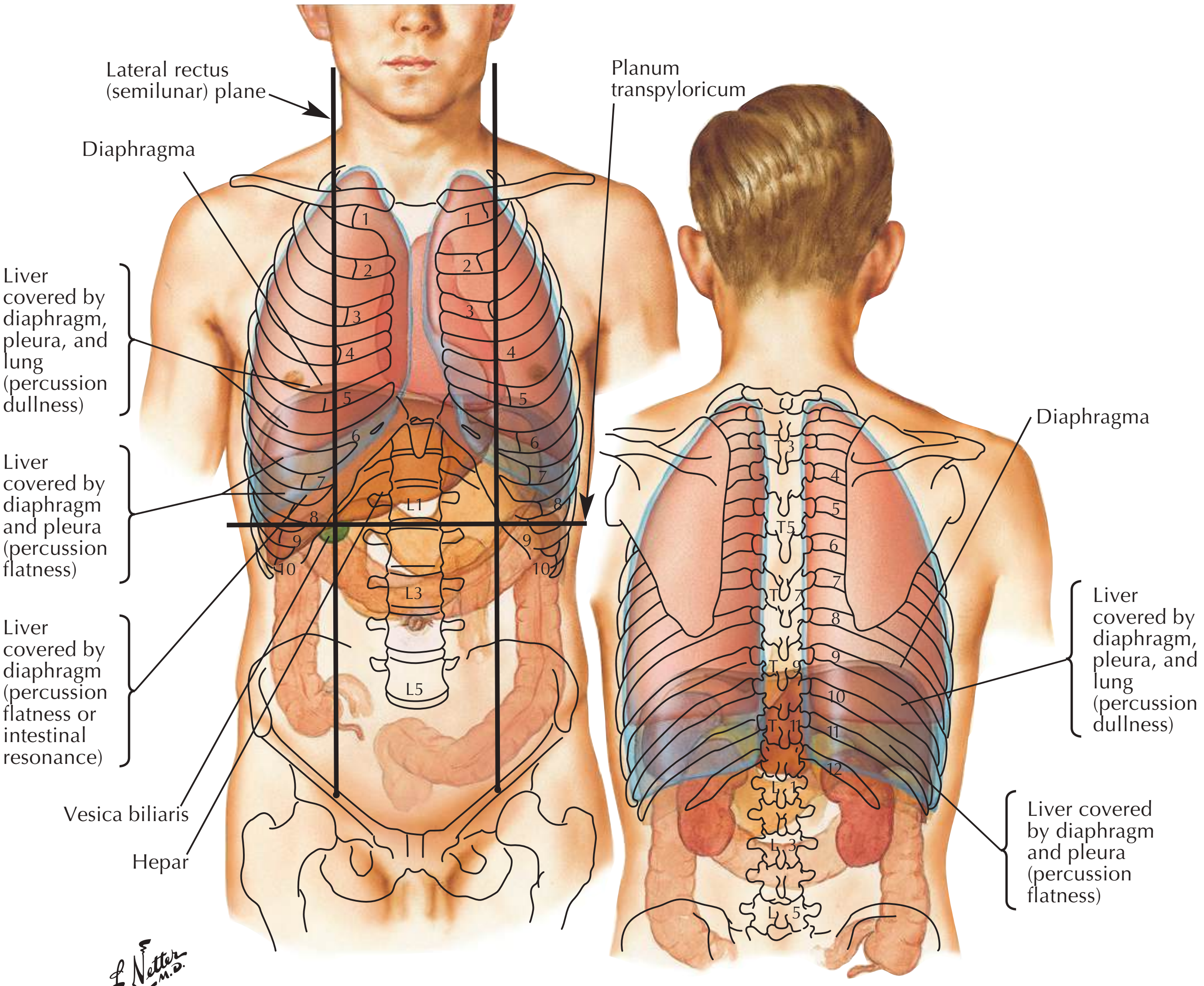
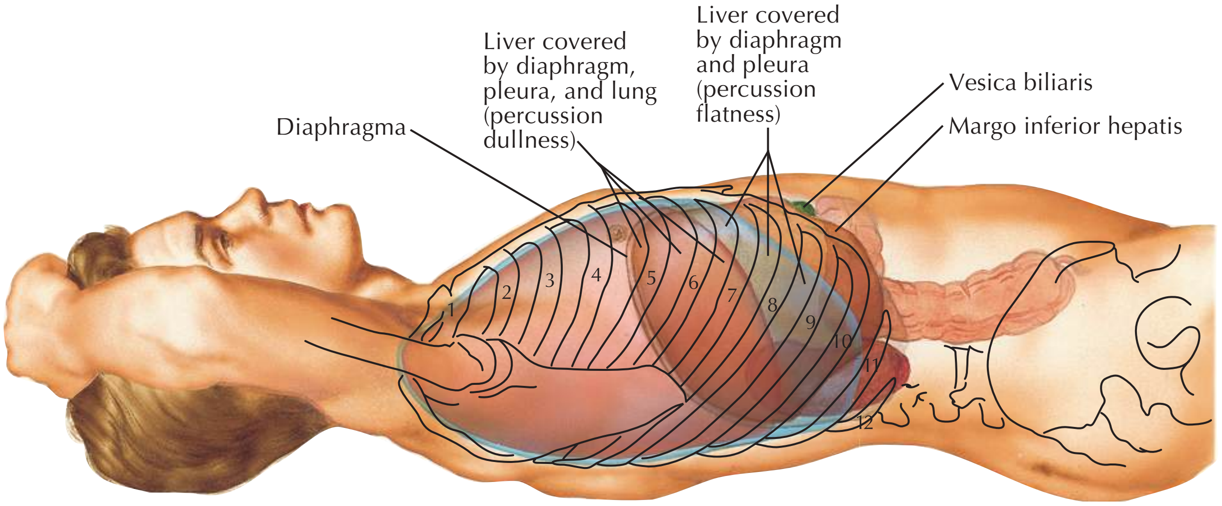


Ramification of nerve fibers around fine branch of A. hepatica

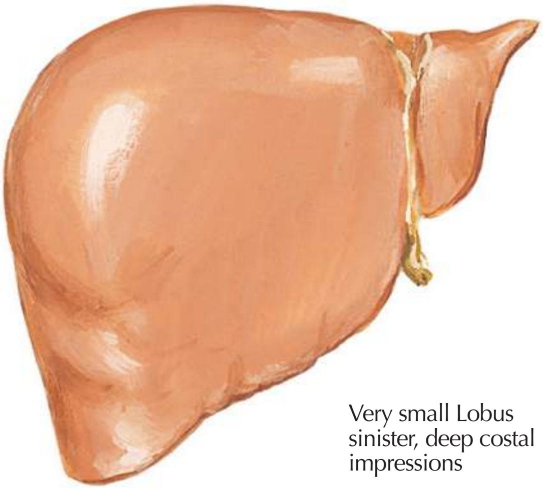
Topography of Liver



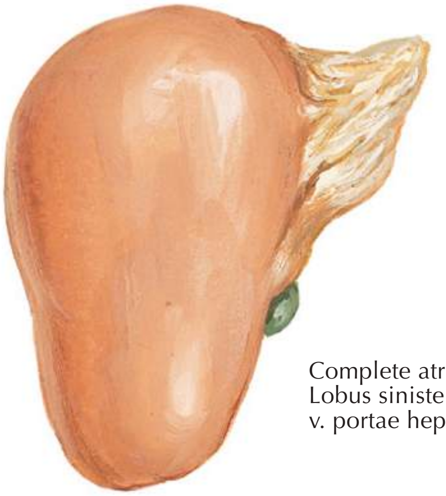
Lateral rectus (semilunar) plane
Planum transpyloricum
Diaphragma
Liver covered by diaphragm, pleura, and lung (percussion dullness)
Liver covered by diaphragm and pleura (percussion flatness)
Liver covered by diaphragm (percussion flatness or intestinal resonance)
Vesica biliaris
Hepar
1
2
3
4
5
6
7
8
9
10
L1
L3
L5
Diaphragma
Liver covered by diaphragm, pleura, and lung (percussion dullness)
Liver covered by diaphragm and pleura (percussion flatness)
T3
4
5
T5
6
T7
7
8
T9
9
10
T11
11
12
L1
L3
L5



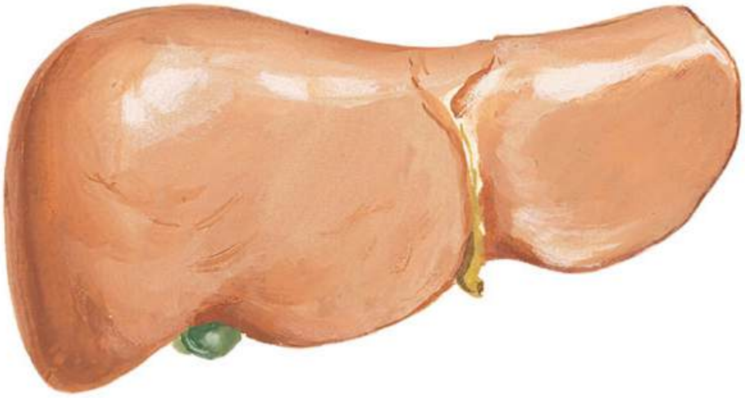
Diaphragma
Liver covered by diaphragm, pleura, and lung (percussion dullness)
Liver covered by diaphragm and pleura (percussion flatness)
Vesica biliaris
Margo inferior hepatis
1
2
3
4
5
6
7
8
9
10
11
12



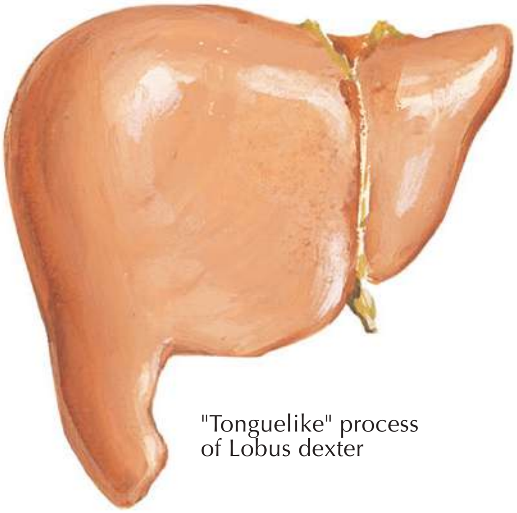
Very small Lobus sinister, deep costal impressions



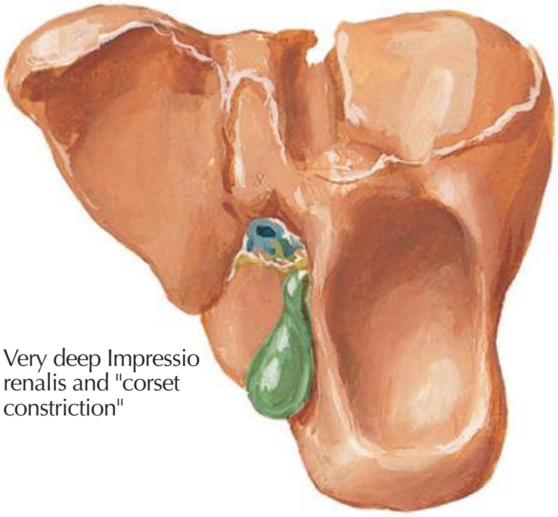
Complete atrophy of Lobus sinister (R. sinister v. portae hepatis compression)



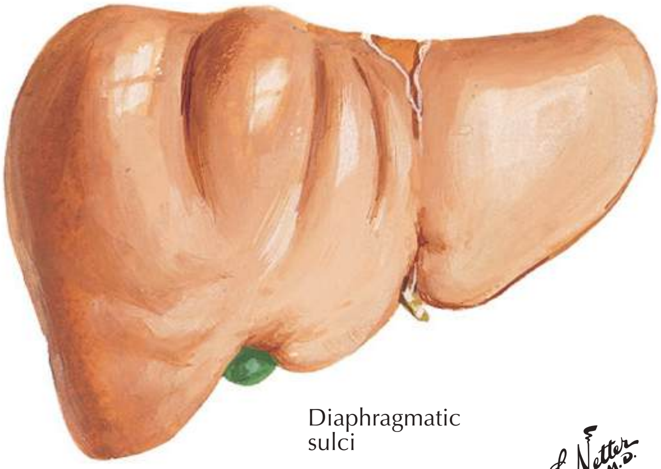
Transverse, "saddlelike" liver, relatively large Lobus sinister



"Tonguelike" process of Lobus dexter



Very deep Impressio renalis and "corset constriction"



Diaphragmatic sulci

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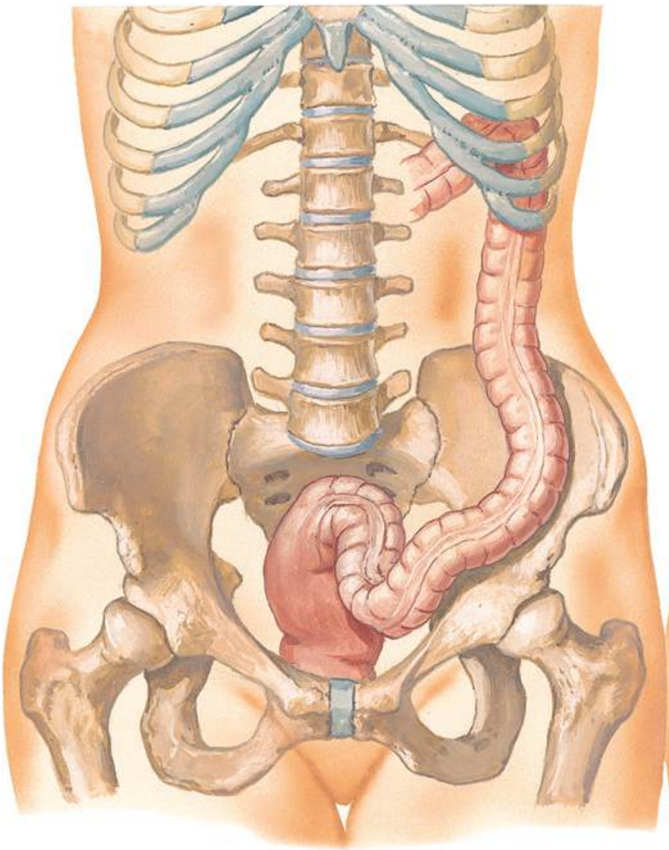
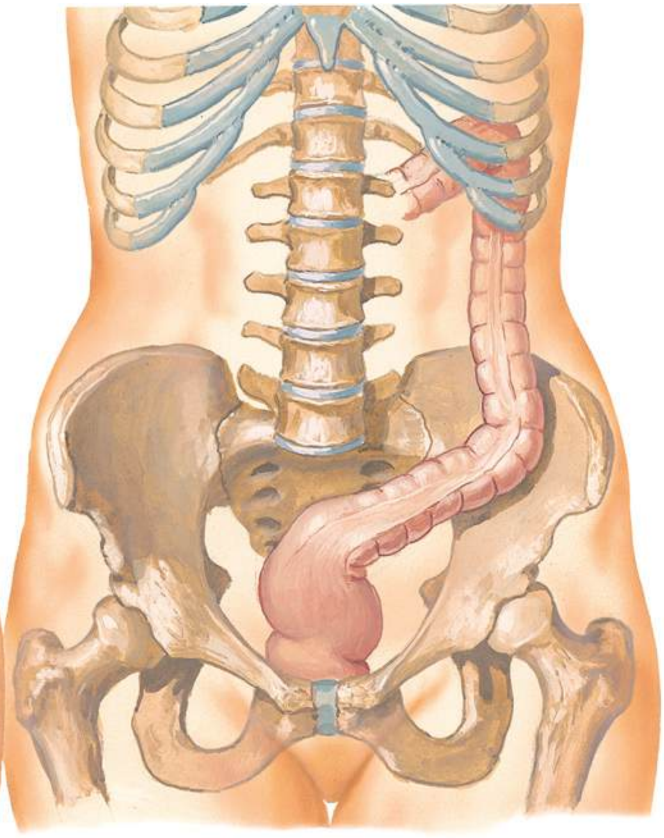
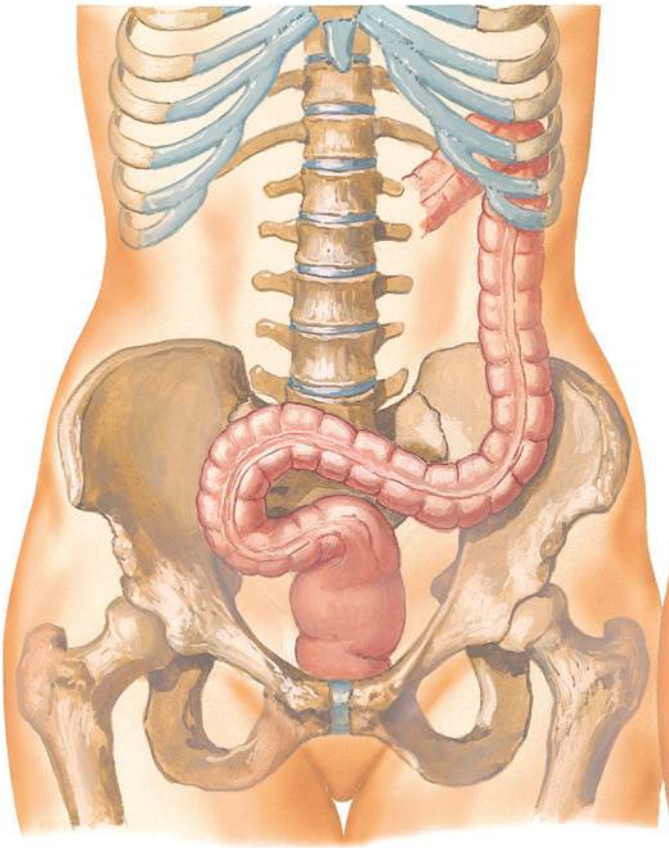
Sigmoid Colon: Variations in Position



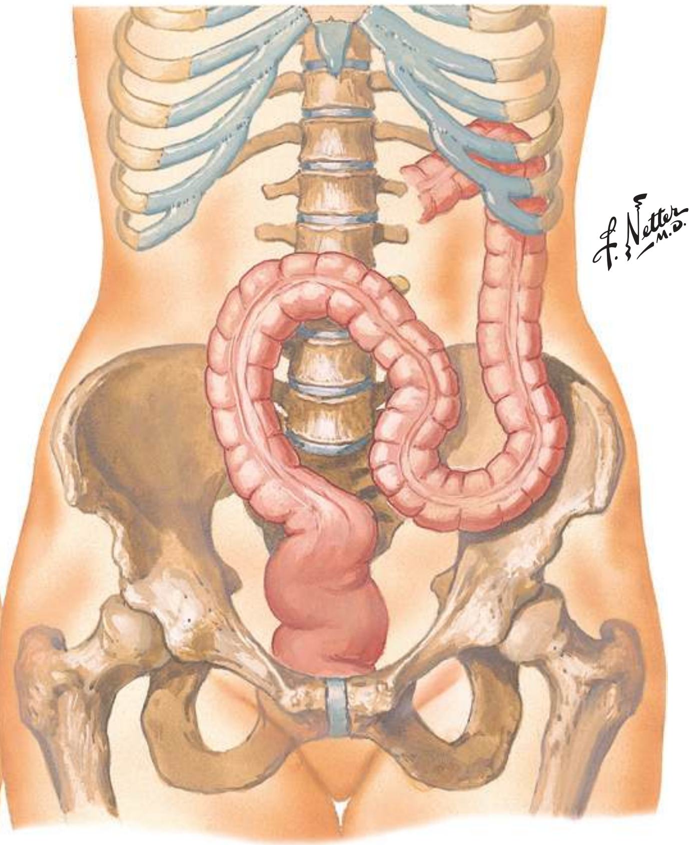
Typical



Short, straight, obliquely into pelvis

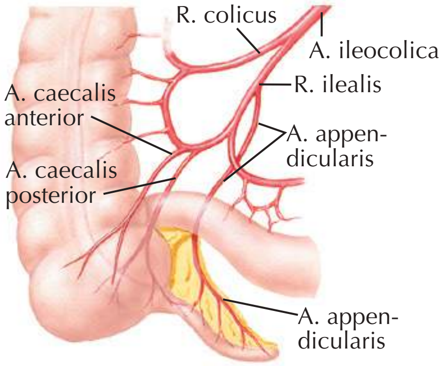


Looping to right side

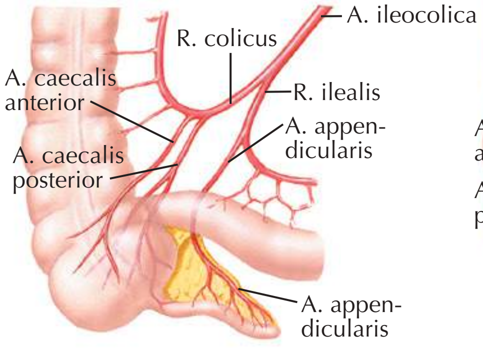


Ascending high into abdomen

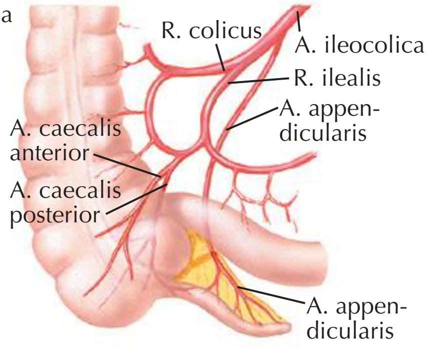
Variations in Arterial Supply to Cecum and Posterior Peritoneal Attachment of Cecum


R. colicus
A. ileocolica
R. ilealis
A. caecalis anterior
A. appendicularis
A. caecalis posterior
A. appendicularis

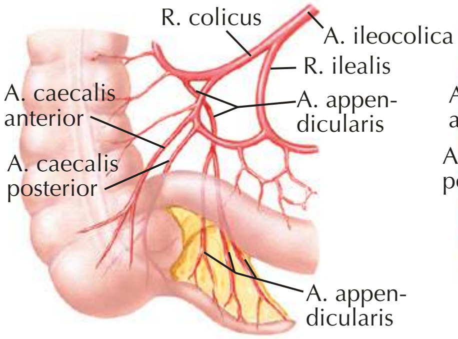
Aa. caecales anterior and posterior originate from arcade between Rr. colicus and ilealis of A. ileocolica; A. appendicularis from R. ilealis


A. ileocolica
R. colicus
A. caecalis anterior
R. ilealis
A. appendicularis
A. caecalis posterior
A. appendicularis

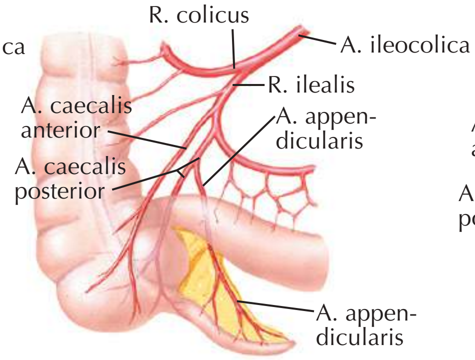
Aa. caecales anterior and posterior originate from R. colicus; A. appendicularis from R. ilealis A. ileocolicae


R. colicus
A. ileocolica
R. ilealis
A. appendicularis
A. caecalis anterior
A. caecalis posterior
A. appendicularis

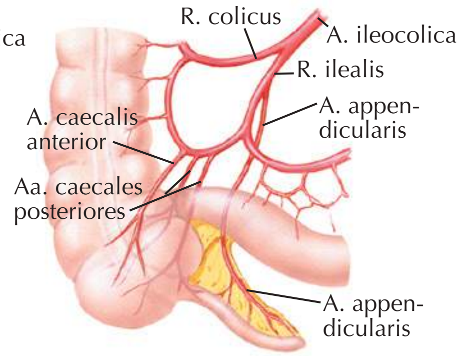
Aa. caecales anterior and posterior have common origin from arcade; A. appendicularis from A. ileocolica


R. colicus
A. ileocolica
R. ilealis
A. caecalis anterior
A. appendicularis
A. caecalis posterior
A. appendicularis

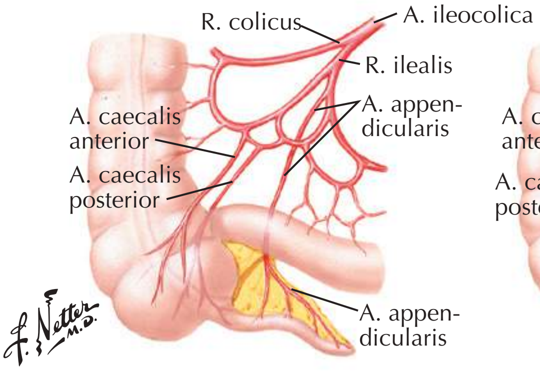
Aa. caecales anterior and posterior originate from arcade between Rr. colicus and ilealis of A. ileocolica; A. appendicularis from R. colicus bifurcates high


R. colicus
A. ileocolica
R. ilealis
A. caecalis anterior
A. appendicularis
A. caecalis posterior
A. appendicularis

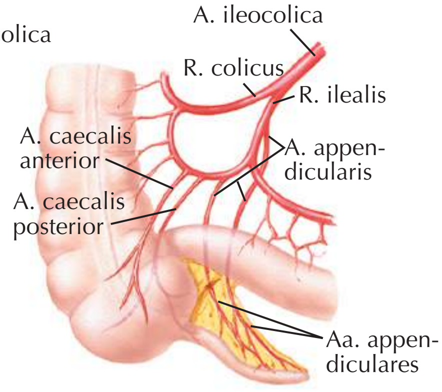
Aa. caecales anterior and posterior originate from R. ilealis a. ileocolicae; A. appendicularis from A. caecalis posterior


R. colicus
A. ileocolica
R. ilealis
A. appendicularis
A. caecalis anterior
Aa. caecales posteriores
A. appendicularis

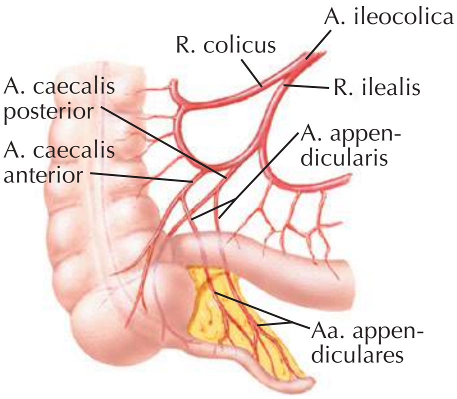
A. caecalis anterior and two Aa. caecales posteriores originate from arcade; A. appendicularis from R. ilealis a. ileocolicae


R. colicus
A. ileocolica
R. ilealis
A. appendicularis
A. caecalis anterior
A. caecalis posterior
A. appendicularis
F. Netter M.D.

Multiple arcades between Rr. ilealis and colicus of A. ileocolica. Aa. caecales anterior and posterior originate from these arcades; A. appendicularis from R. ilealis

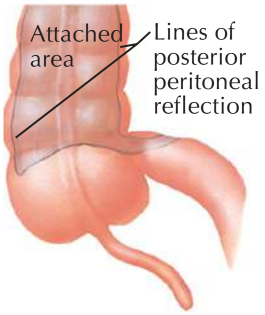

A. ileocolica
R. colicus
R. ilealis
A. appendicularis
A. caecalis anterior
A. caecalis posterior
Aa. appendiculares

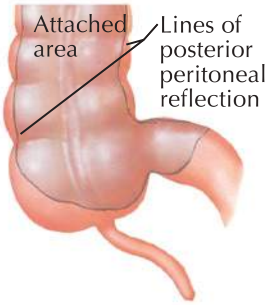
Aa. caecales anterior and posterior originate from arcade between Rr. colicus and ilealis of A. ileocolica; two Aa. appendiculares, one deriving from arcade, the other from R. ilealis, are present

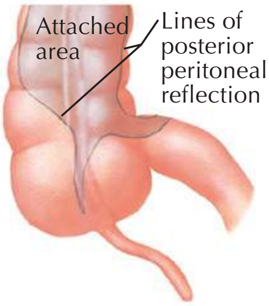

A. ileocolica
R. colicus
R. ilealis
A. caecalis posterior
A. appendicularis
A. caecalis anterior
Aa. appendiculares

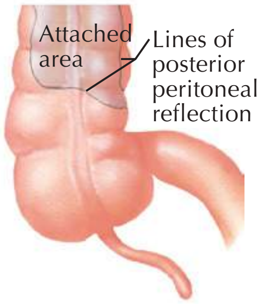
Aa. caecales anterior and posterior originate from arcade; two Aa. appendiculares, one deriving from A. caecalis anterior, the other from A. caecalis posterior, are present

Some variations in posterior peritoneal attachment of cecum

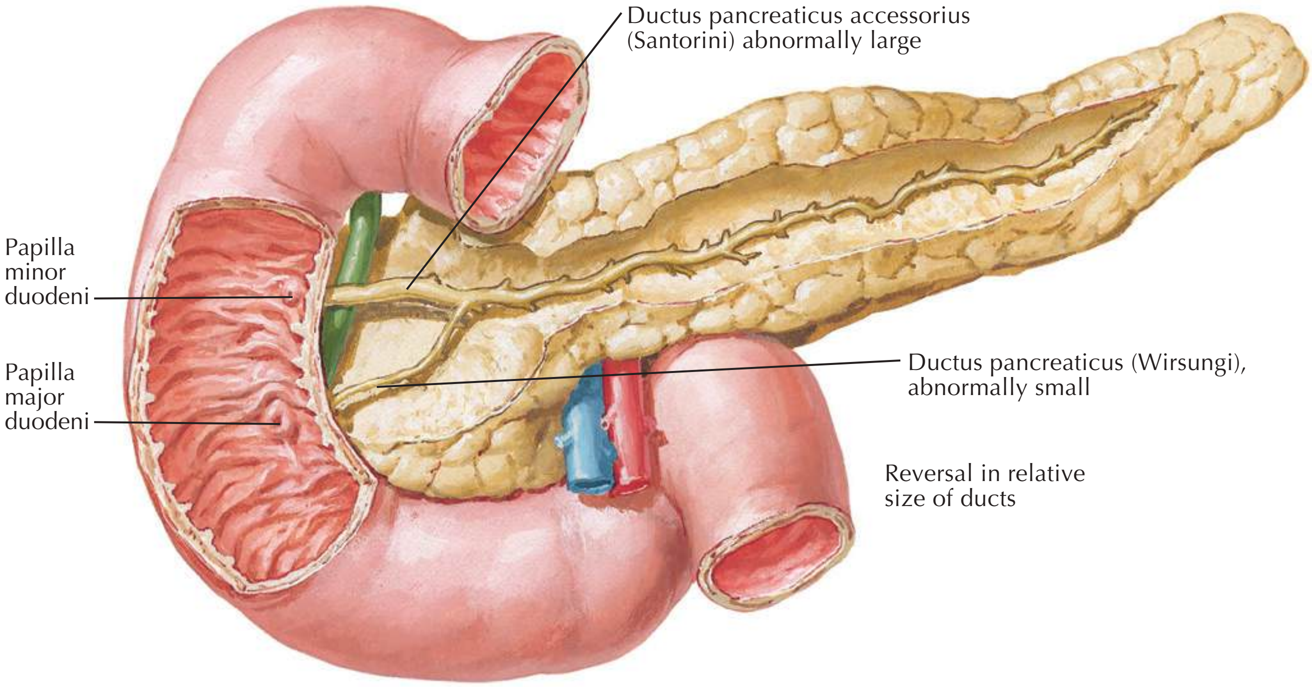

Attached area
Lines of posterior peritoneal reflection

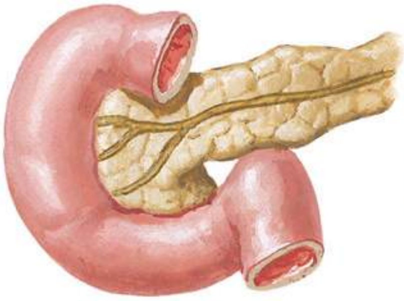

Attached area
Lines of posterior peritoneal reflection


Attached area
Lines of posterior peritoneal reflection

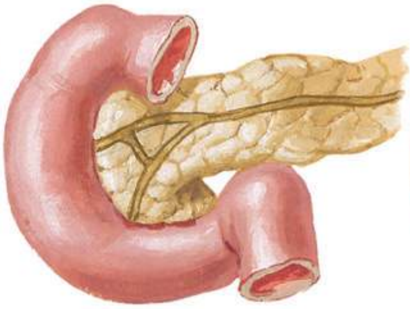

Attached area
Lines of posterior peritoneal reflection

Variations in Pancreatic Duct

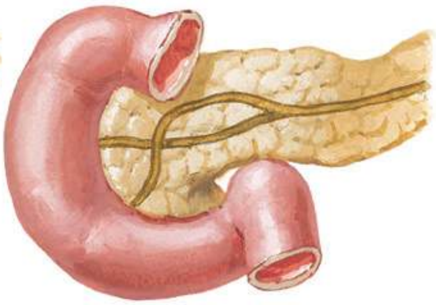

Ductus pancreaticus accessorius (Santorini) abnormally large
Papilla minor duodeni
Papilla major duodeni
Ductus pancreaticus (Wirsungi), abnormally small
Reversal in relative size of ducts



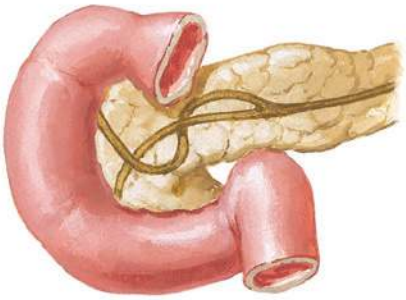
Two Ductus pancreatici accessorii



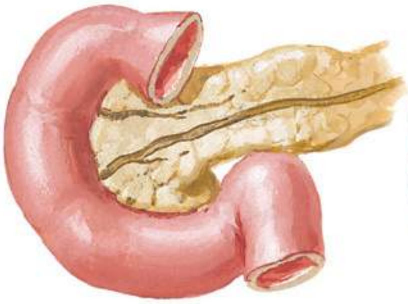
Anastomosis between ducts



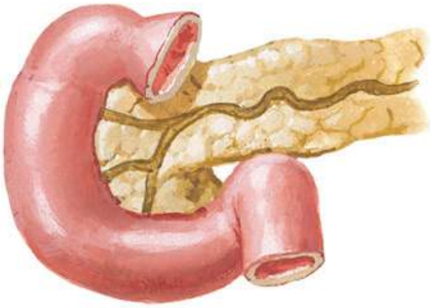
Crossing of ducts



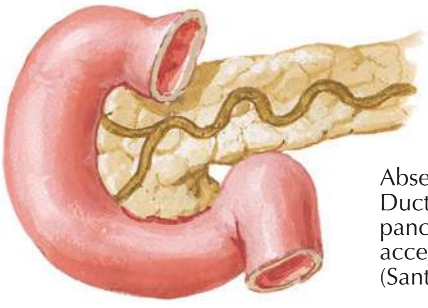
Double crossing of ducts



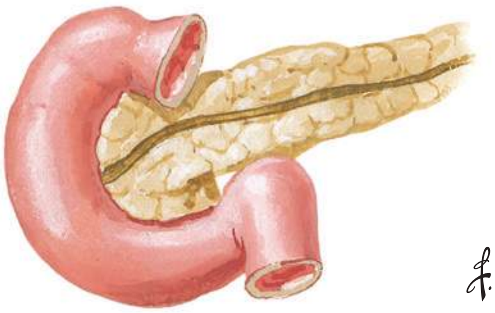
No communication between ducts



Two Ductus pancreatici

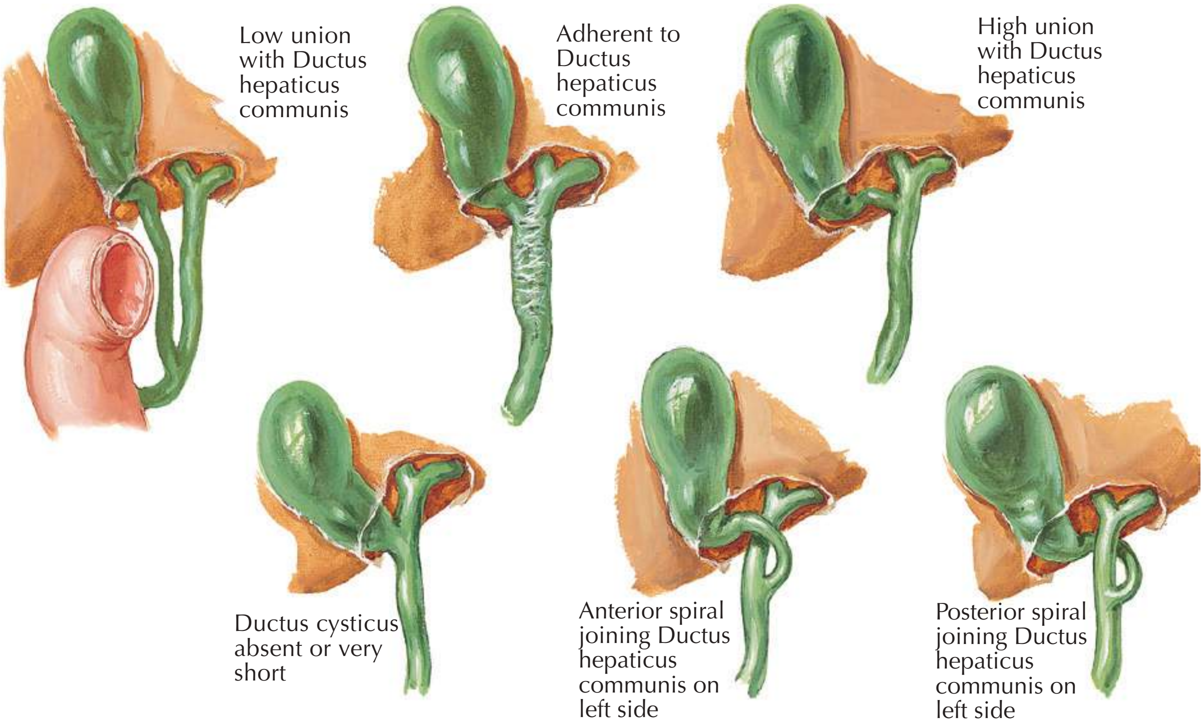


Tortuosity of ducts

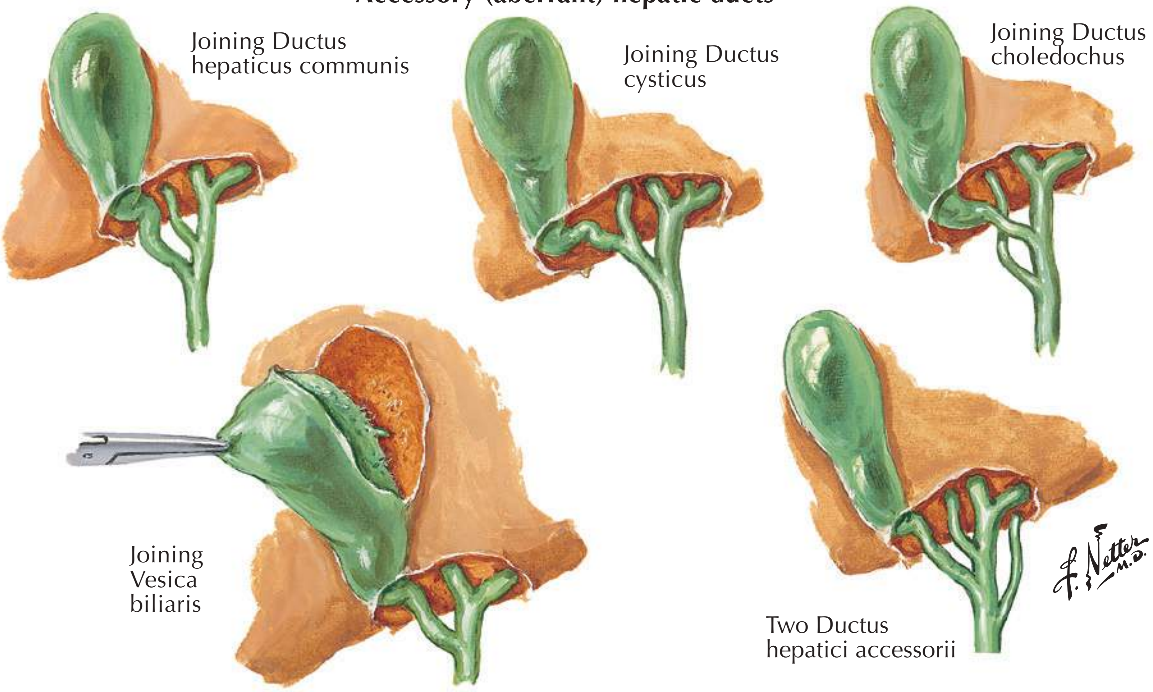


Absence of Ductus pancreaticus accessorius (Santorini)

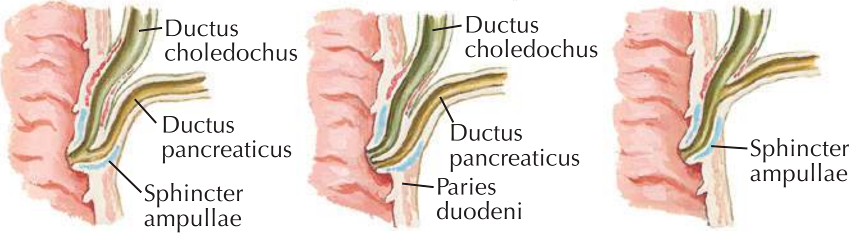
Variations in ductus cysticus


Low union with Ductus hepaticus communis
Adherent to Ductus hepaticus communis
High union with Ductus hepaticus communis
Ductus cysticus absent or very short
Anterior spiral joining Ductus hepaticus communis on left side
Posterior spiral joining Ductus hepaticus communis on left side

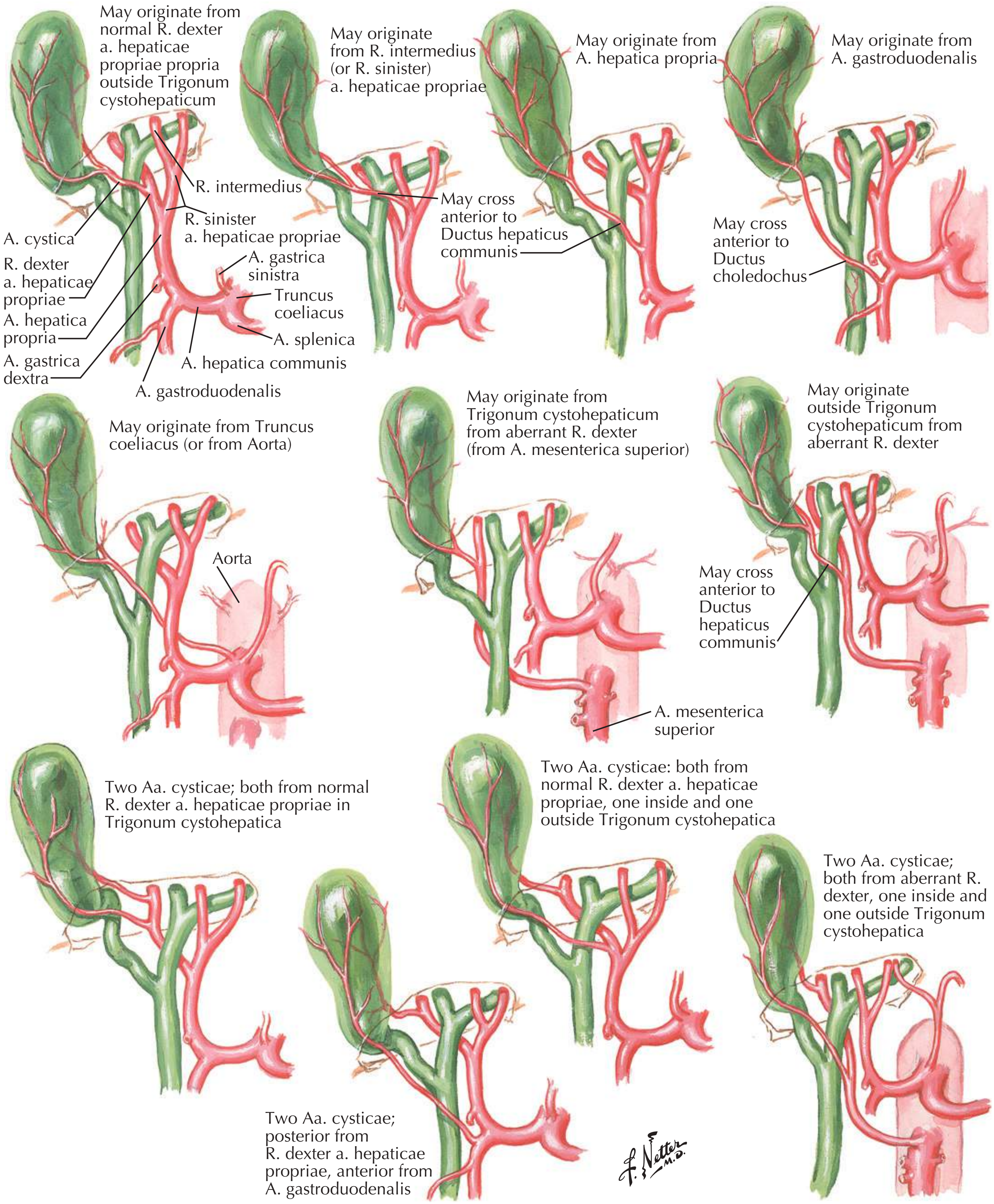
Accessory (aberrant) hepatic ducts


Joining Ductus hepaticus communis
Joining Ductus cysticus
Joining Ductus choledochus
Joining Vesica biliaris
Two Ductus hepatici accessorii
F. Netter M.D.

Variations in union of bile and pancreatic ducts

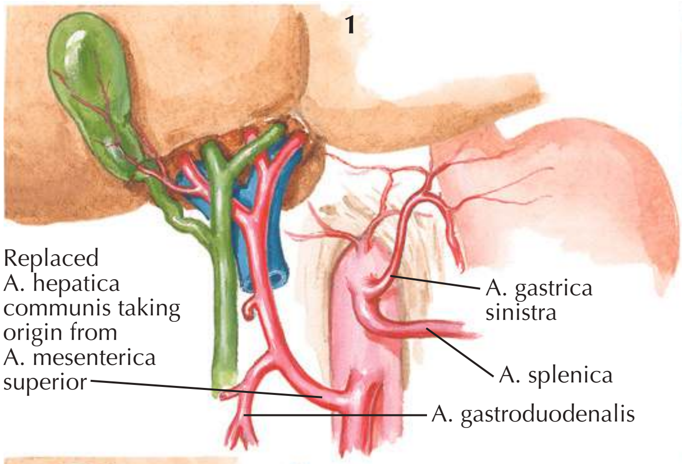

Ductus choledochus
Ductus pancreaticus
Sphincter ampullae
Ductus choledochus
Ductus pancreaticus
Paries duodeni
Sphincter ampullae

Short common channel No common channel Long common channel

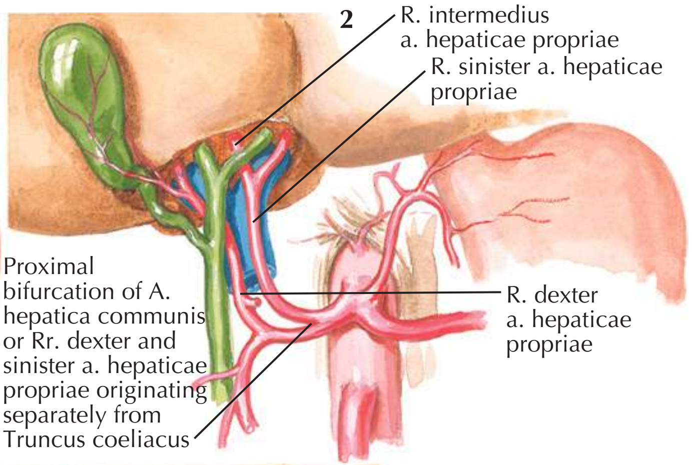

May originate from normal R. dexter a. hepaticae propriae propria outside Trigonum cystohepaticum
R. intermedius
R. sinister a. hepaticae propriae
A. cystica
R. dexter a. hepaticae propriae
A. hepatica propria
A. gastrica dextra
A. gastrica sinistra
Truncus coeliacus
A. splenica
A. hepatica communis
A. gastroduodenalis
May originate from R. intermedius (or R. sinister) a. hepaticae propriae
May cross anterior to Ductus hepaticus communis
May originate from A. hepatica propria
May originate from A. gastroduodenalis
May cross anterior to Ductus choledochus
May originate from Truncus coeliacus (or from Aorta)
Aorta
May originate from Trigonum cystohepaticum from aberrant R. dexter (from A. mesenterica superior)
A. mesenterica superior
May originate outside Trigonum cystohepaticum from aberrant R. dexter
May cross anterior to Ductus hepaticus communis
Two Aa. cysticae; both from normal R. dexter a. hepaticae propriae in Trigonum cystohepatica
Two Aa. cysticae: both from normal R. dexter a. hepaticae propriae, one inside and one outside Trigonum cystohepatica
Two Aa. cysticae; both from aberrant R. dexter, one inside and one outside Trigonum cystohepatica
Two Aa. cysticae; posterior from R. dexter a. hepaticae propriae, anterior from A. gastroduodenalis
F. Netter M.D.

Variations in Hepatic Artery

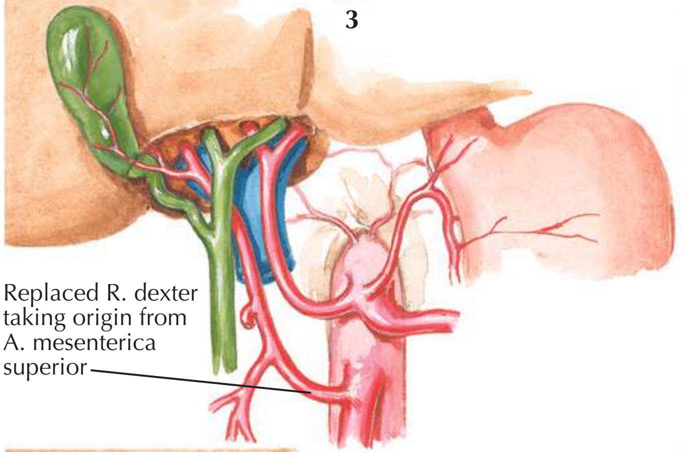
1


Replaced A. hepatica communis taking origin from A. mesenterica superior
A. gastrica sinistra
A. splenica
A. gastroduodenalis

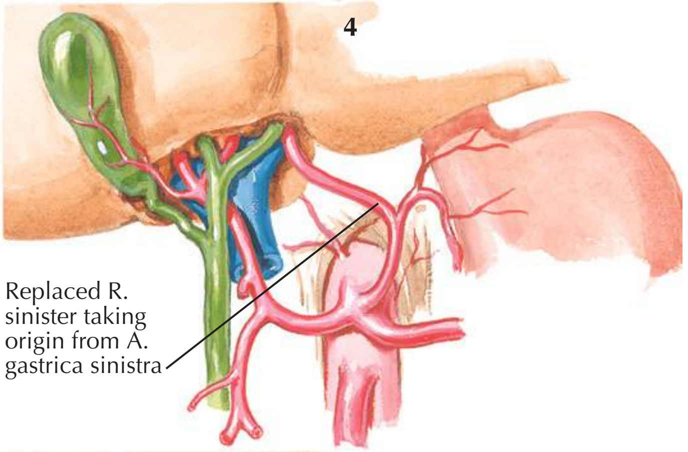
2


R. intermedius a. hepaticae propriae
R. sinister a. hepaticae propriae
Proximal bifurcation of A. hepatica communis or Rr. dexter and sinister a. hepaticae propriae originating separately from Truncus coeliacus
R. dexter a. hepaticae propriae

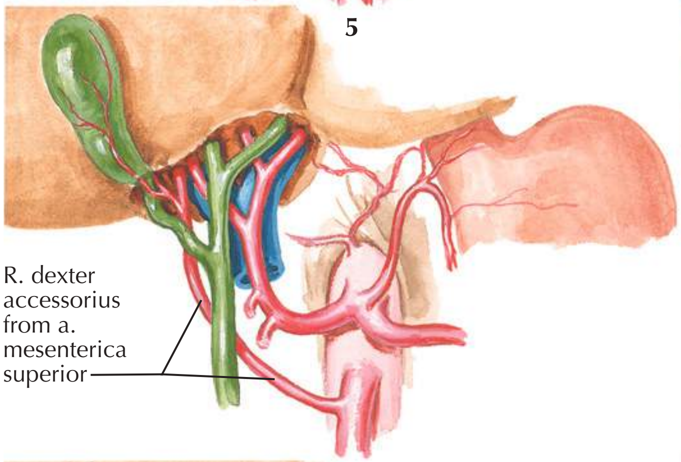
3


Replaced R. dexter taking origin from A. mesenterica superior

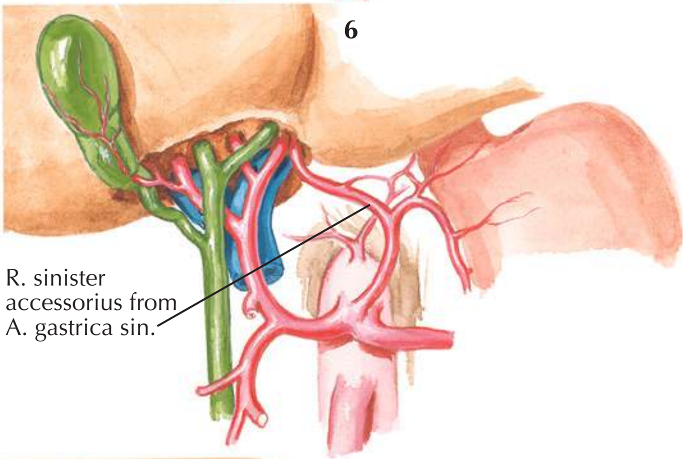
4


Replaced R. sinister taking origin from A. gastrica sinistra

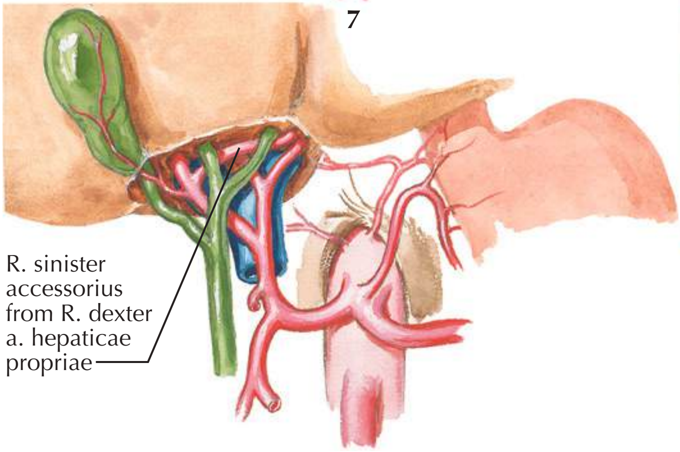
5


R. dexter accessorius from a. mesenterica superior

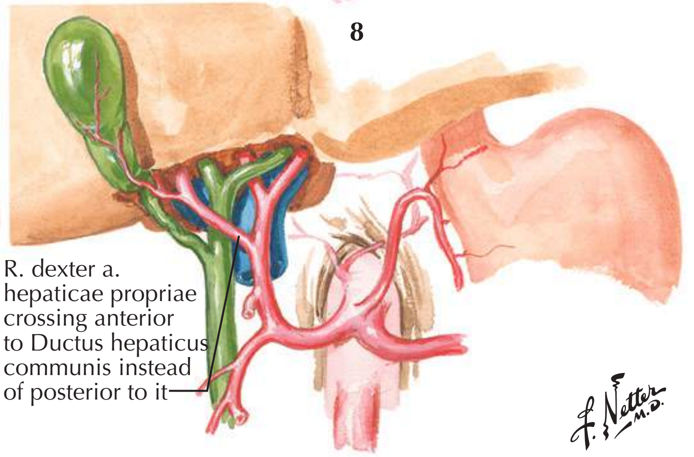
6


R. sinister accessorius from A. gastrica sin.

7

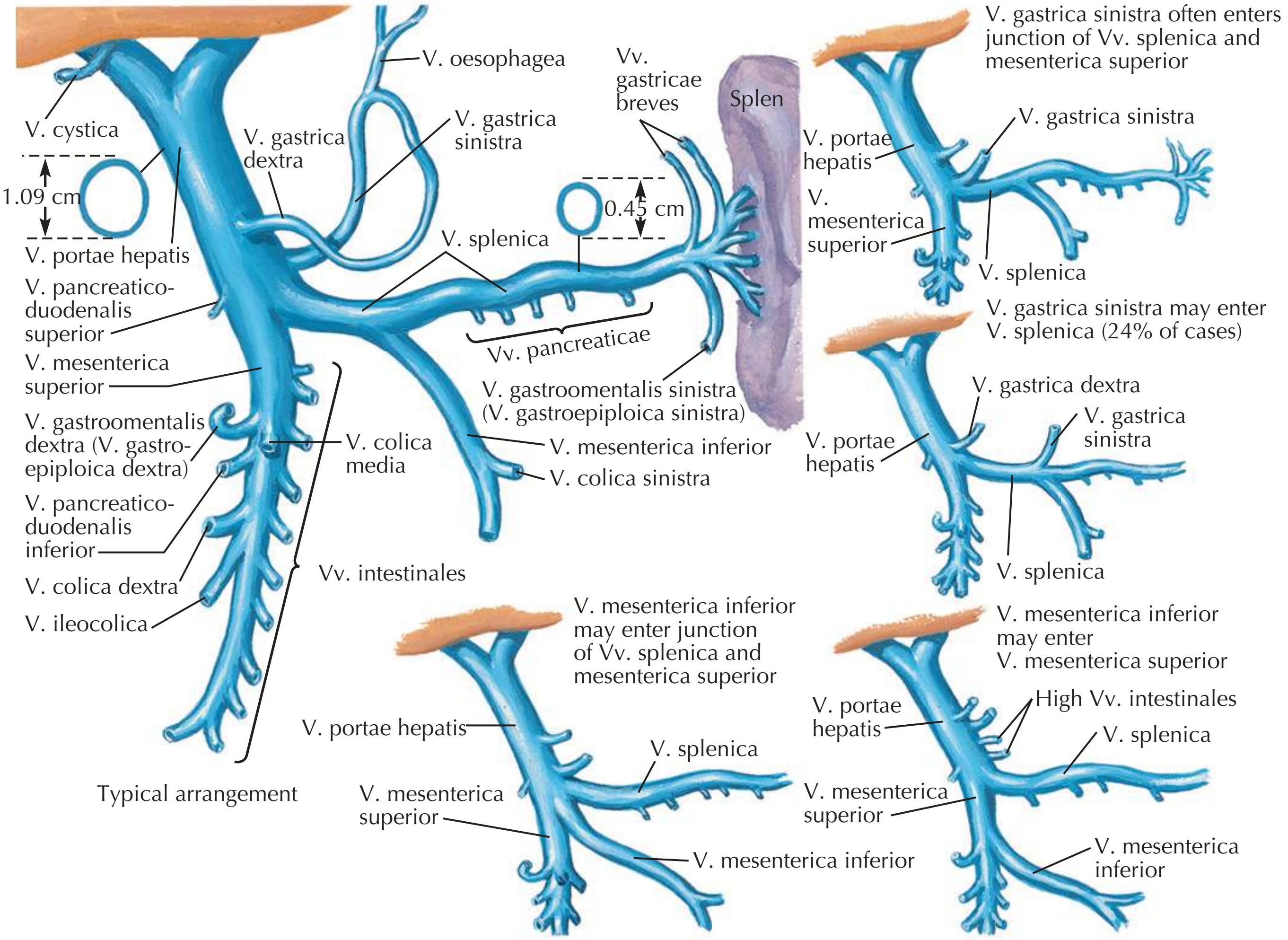

R. sinister accessorius from R. dexter a. hepaticae propriae

8


R. dexter a. hepaticae propriae crossing anterior to Ductus hepaticus communis instead of posterior to it
F. Netter M.D.

Variations and Anomalies of Hepatic Portal Vein

Variations


V. cystica
1.09 cm
V. portae hepatis
V. pancreaticoduodenalis superior
V. mesenterica superior
V. gastroomentalis dextra (V. gastroepiploica dextra)
V. pancreaticoduodenalis inferior
V. colica dextra
V. ileocolica
V. gastrica dextra
V. oesophagea
V. gastrica sinistra
V. splenica
Vv. gastricae breves
Splen
0.45 cm
Vv. pancreaticae
V. gastroomentalis sinistra (V. gastroepiploica sinistra)
V. colica media
V. mesenterica inferior
V. colica sinistra
Vv. intestinales
V. portae hepatis
V. mesenterica superior
V. gastrica sinistra
V. splenica
V. gastrica dextra
V. portae hepatis
V. gastrica sinistra
V. splenica
V. portae hepatis
V. splenica
V. mesenterica superior
V. mesenterica inferior
V. portae hepatis
High Vv. intestinales
V. splenica
V. mesenterica superior
V. mesenterica inferior

Typical arrangement

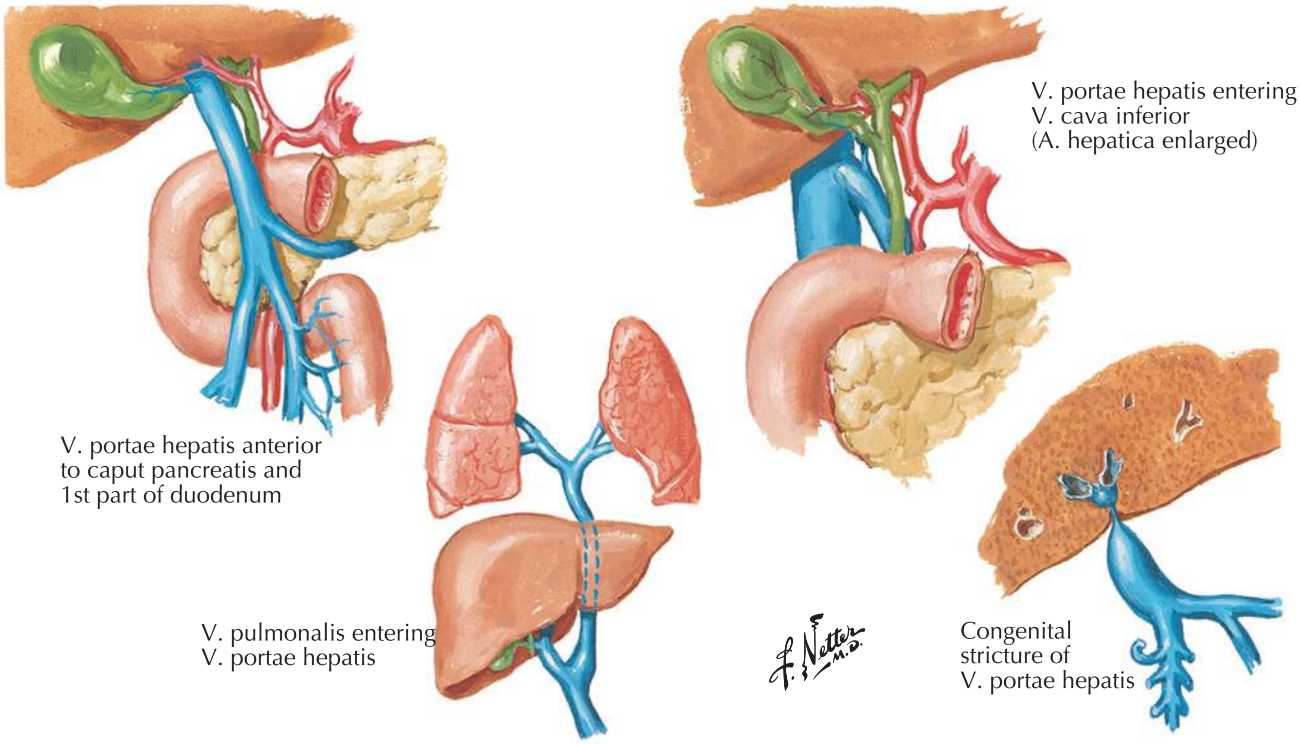
V. gastrica sinistra often enters junction of Vv. splenica and mesenterica superior

V. gastrica sinistra may enter V. splenica (24% of cases)

V. mesenterica inferior may enter junction of Vv. splenica and mesenterica superior

V. mesenterica inferior may enter V. mesenterica superior

Anomalies



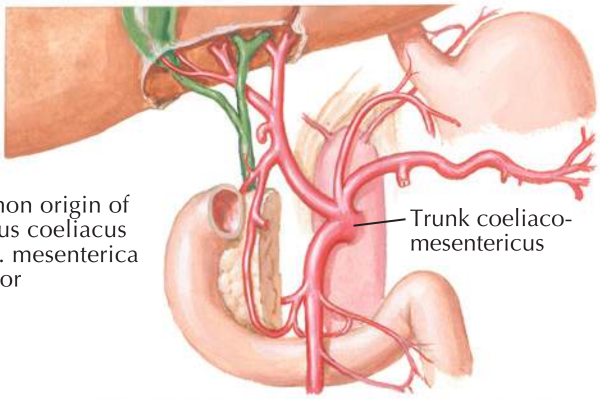
V. portae hepatis anterior to caput pancreatis and 1st part of duodenum

V. pulmonalis entering V. portae hepatis

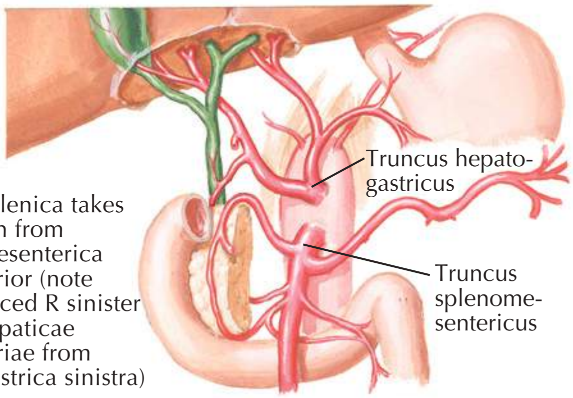
V. portae hepatis entering V. cava inferior (A. hepatica enlarged)

Congenital stricture of V. portae hepatis

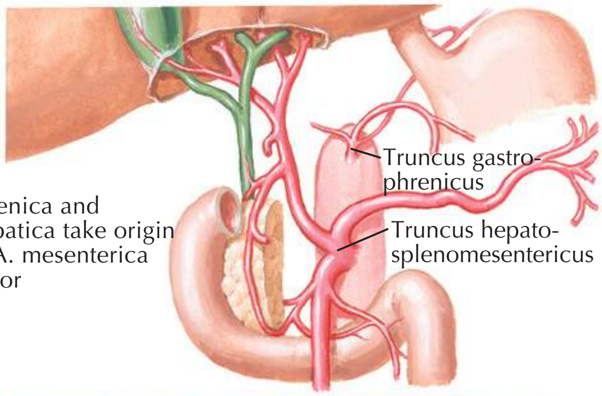
Variations in Celiac Trunk


Trunk coeliaco-mesentericus

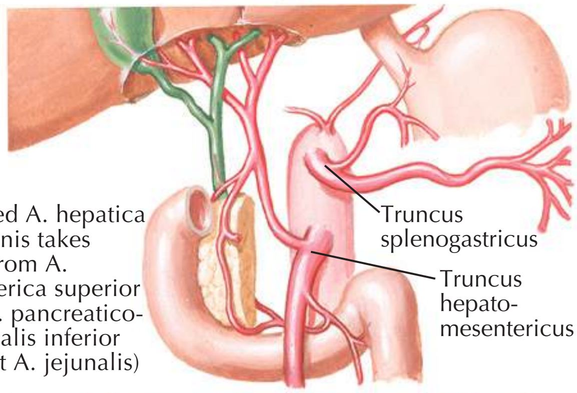
Common origin of Truncus coeliacus and A. mesenterica superior


Truncus hepato-gastricus
Truncus splenomesentericus

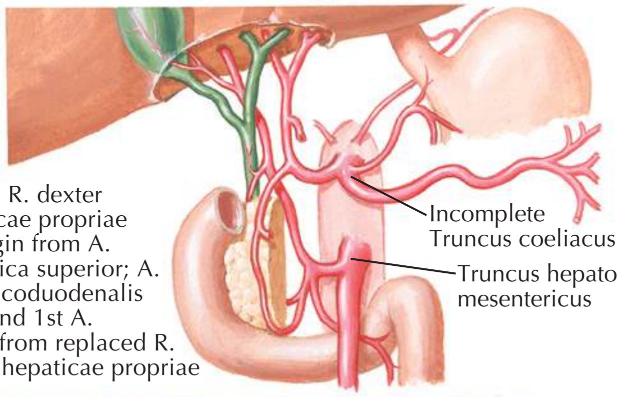
A. splenica takes origin from A. mesenterica superior (note replaced R sinister a. hepaticae propriae from A. gastrica sinistra)


Truncus gastrophrenicus
Truncus hepatosplenomesentericus

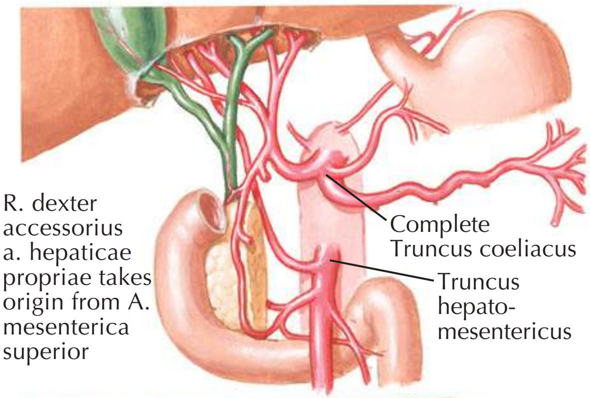
A. splenica and A. hepatica take origin from A. mesenterica superior


Truncus splenogastricus
Truncus hepatomesentericus

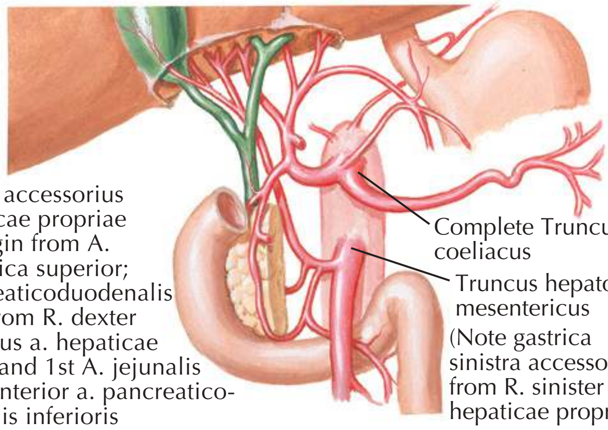
Replaced A. hepatica communis takes origin from A. mesenterica superior (note A. pancreaticoduodenalis inferior from 1st A. jejunalis)


Incomplete Truncus coeliacus
Truncus hepatomesentericus

Replaced R. dexter a. hepaticae propriae takes origin from A. mesenterica superior; A. pancreaticoduodenalis inferior and 1st A. jejunalis from replaced R. dexter a. hepaticae propriae

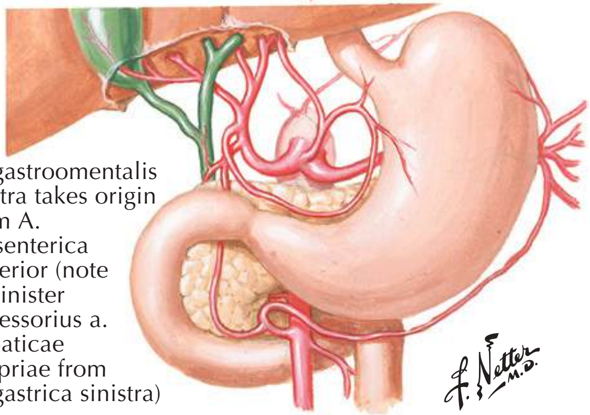

Complete Truncus coeliacus
Truncus hepatomesentericus

R. dexter accessorius a. hepaticae propriae takes origin from A. mesenterica superior


Complete Truncus coeliacus
Truncus hepatomesentericus

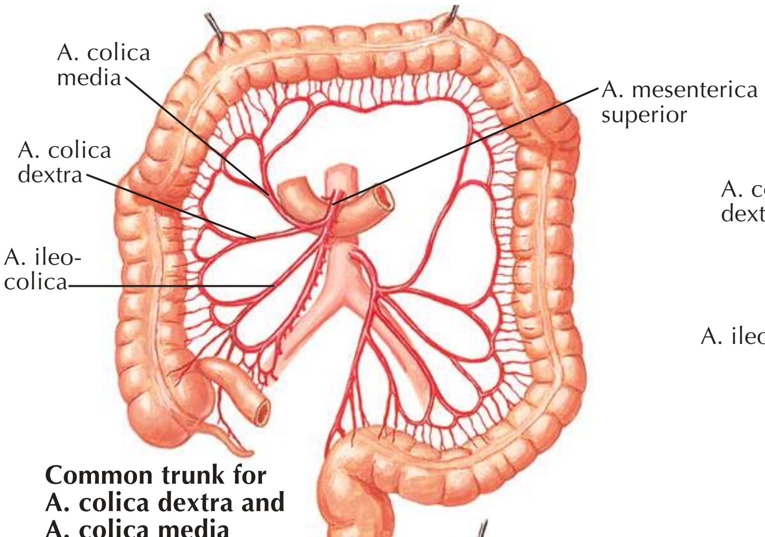
(Note gastrica sinistra accessoria from R. sinister a. hepaticae propriae)

R. dexter accessorius a. hepaticae propriae takes origin from A. mesenterica superior; A. pancreaticoduodenalis inferior from R. dexter accessorius a. hepaticae propriae and 1st A. jejunalis from R. anterior a. pancreaticoduodenalis inferioris

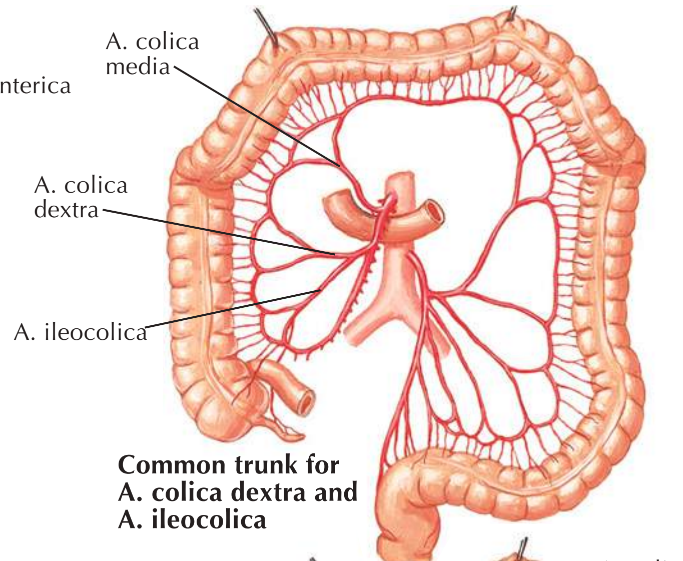


A. gastroomentalis dextra takes origin from A. mesenterica superior (note R. sinister accessorius a. hepaticae propriae from A. gastrica sinistra)

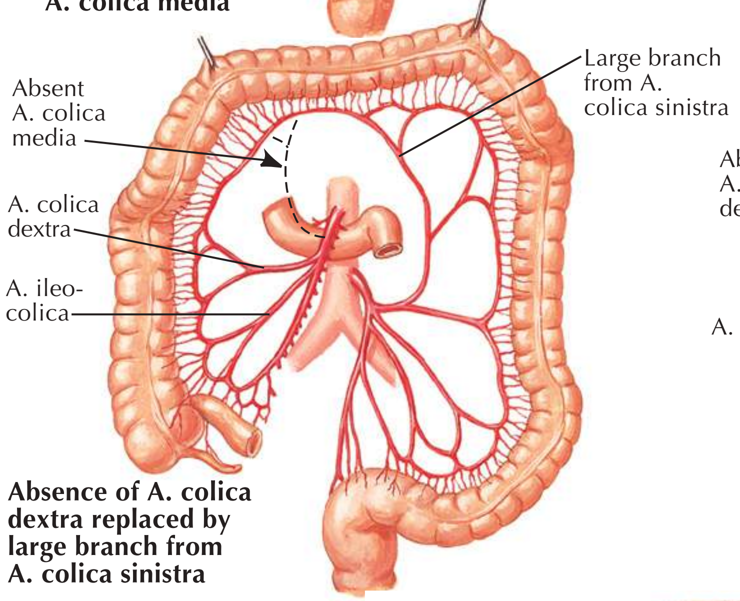
Variations in Colic Arteries


A. colica media
A. colica dextra
A. ileocolica
A. mesenterica superior

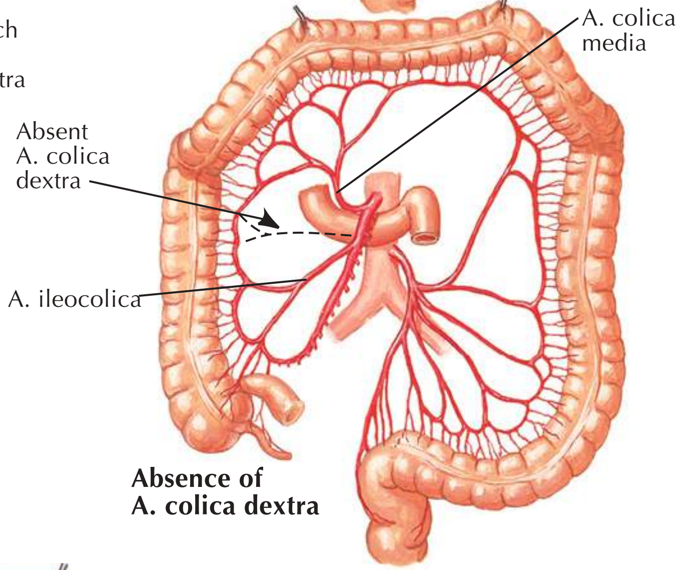
Common trunk for A. colica dextra and A. colica media


A. colica media
A. colica dextra
A. ileocolica

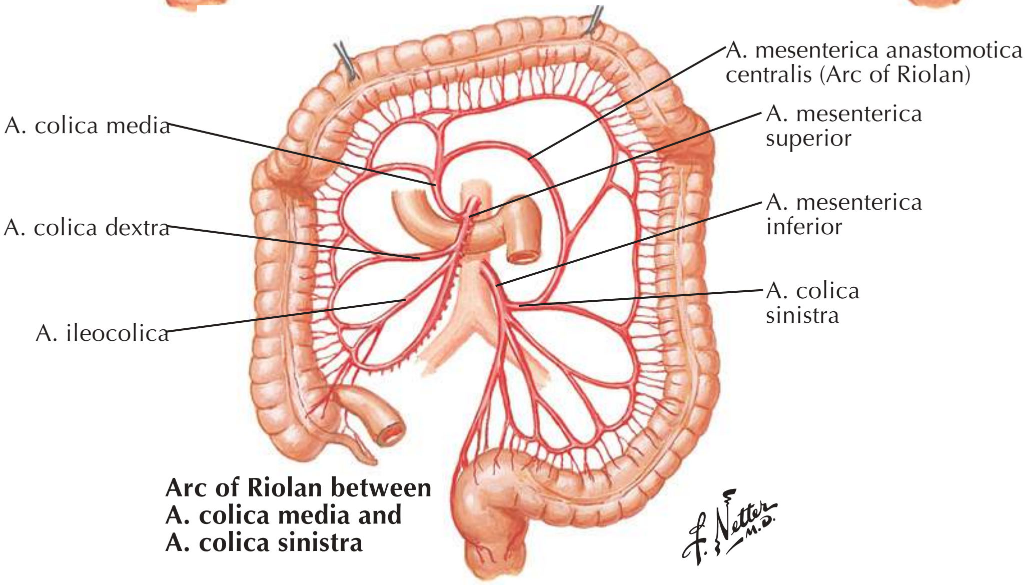
Common trunk for A. colica dextra and A. ileocolica


Absent A. colica media
A. colica dextra
A. ileocolica
Large branch from A. colica sinistra

Absence of A. colica dextra replaced by large branch from A. colica sinistra

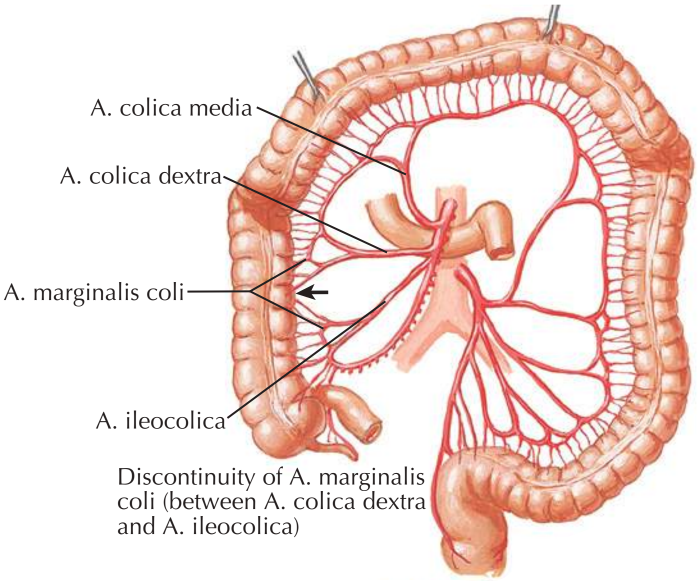

Absent A. colica dextra
A. ileocolica
A. colica media

Absence of A. colica dextra

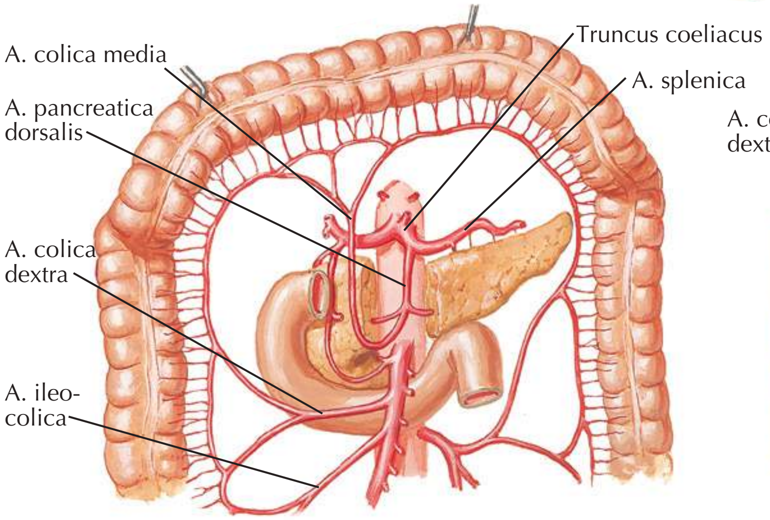

A. colica media
A. colica dextra
A. ileocolica
A. mesenterica anastomotica centralis (Arc of Riolan)
A. mesenterica superior
A. mesenterica inferior
A. colica sinistra

Arc of Riolan between A. colica media and A. colica sinistra

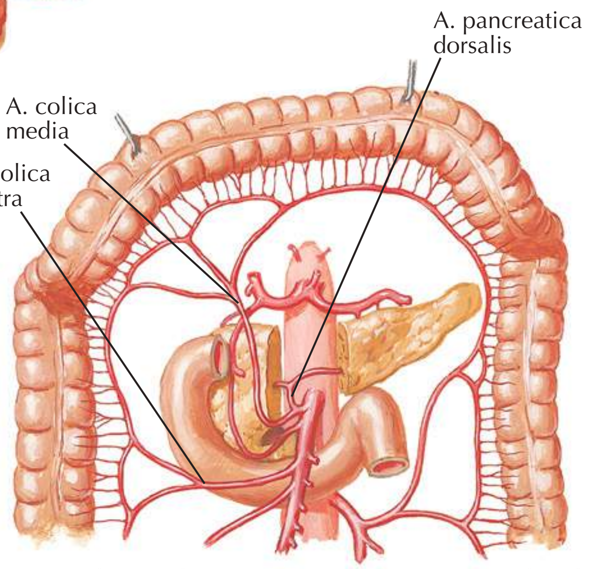
Variations in Colic Arteries (continued)


A. colica media
A. colica dextra
A. marginalis coli
A. ileocolica

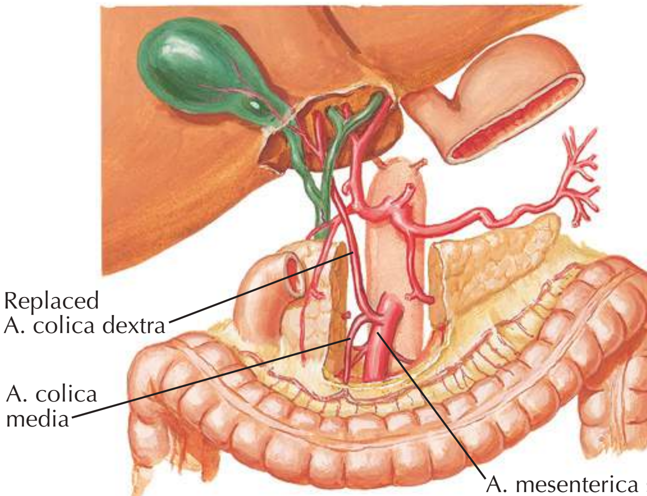
Discontinuity of A. marginalis coli (between A. colica dextra and A. ileocolica)


A. colica media
A. pancreatica dorsalis
A. colica dextra
A. ileo-colica
Truncus coeliacus
A. splenica

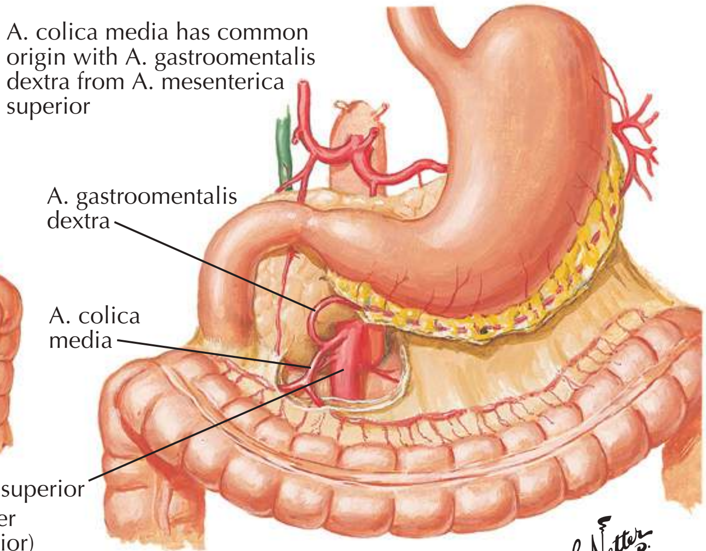
A. colica media originates from Truncus coeliacus via A. pancreatica dorsalis


A. pancreatica dorsalis
A. colica media
A. colica dextra

A. colica media gives origin to A. pancreatica dorsalis

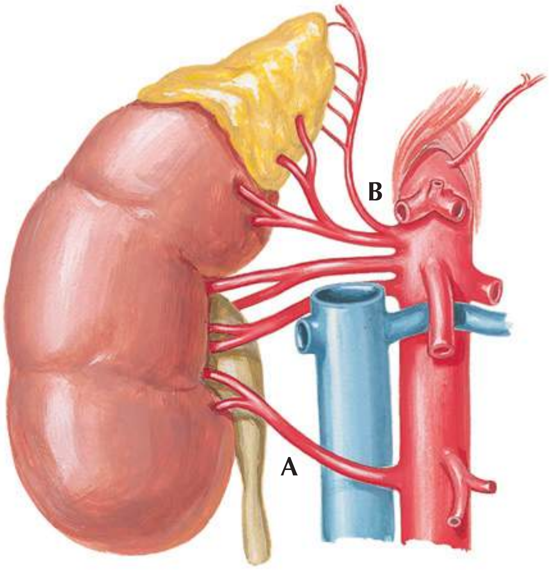

Replaced A. colica dextra
A. colica media
A. mesenterica superior

A. colica media originates from replaced R. dexter a. hepaticae propriae (from A. mesenterica superior)


A. colica media has common origin with A. gastroomentalis dextra from A. mesenterica superior

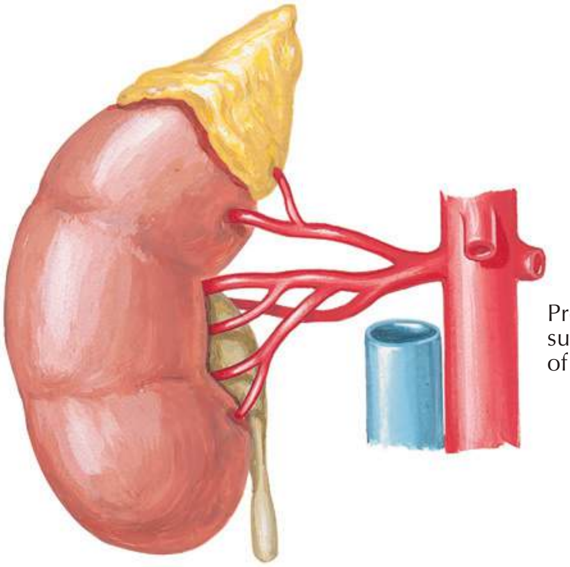
A. gastroomentalis dextra
A. colica media

Variations in Renal Artery and Vein

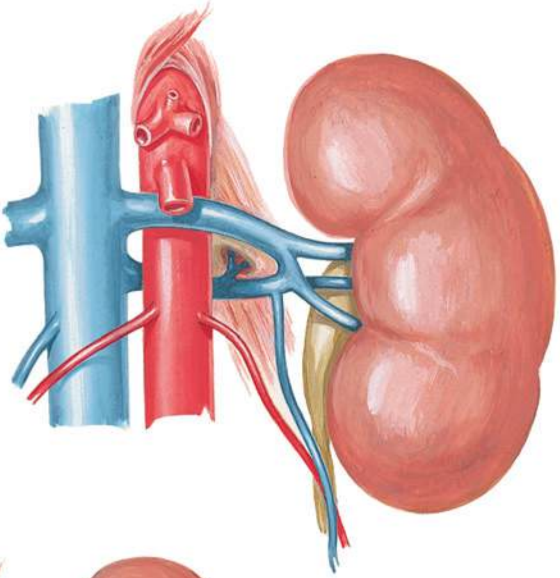


A Low accessory A. renalis dexter may pass anterior to V. cava inferior instead of posterior to it

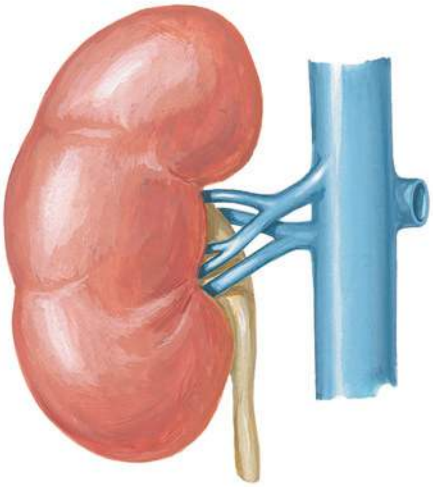
B A. phrenica inferior with A. suprarenalis superior may arise from A. renalis (A. suprarenalis media absent)



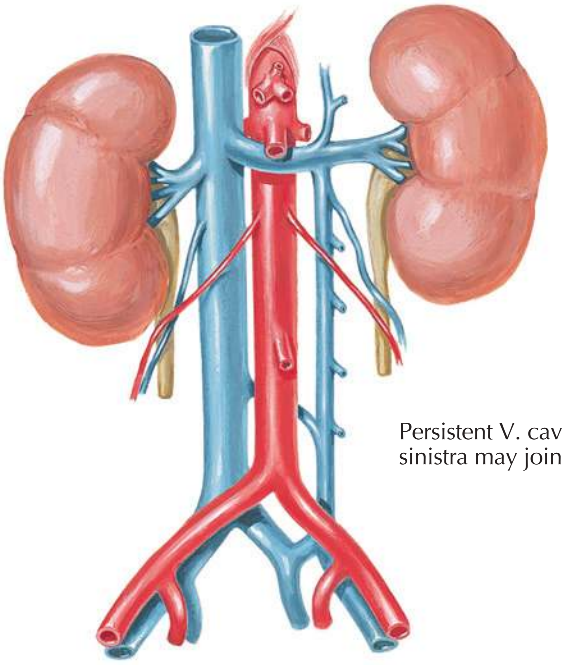
Proximal subdivision of A. renalis



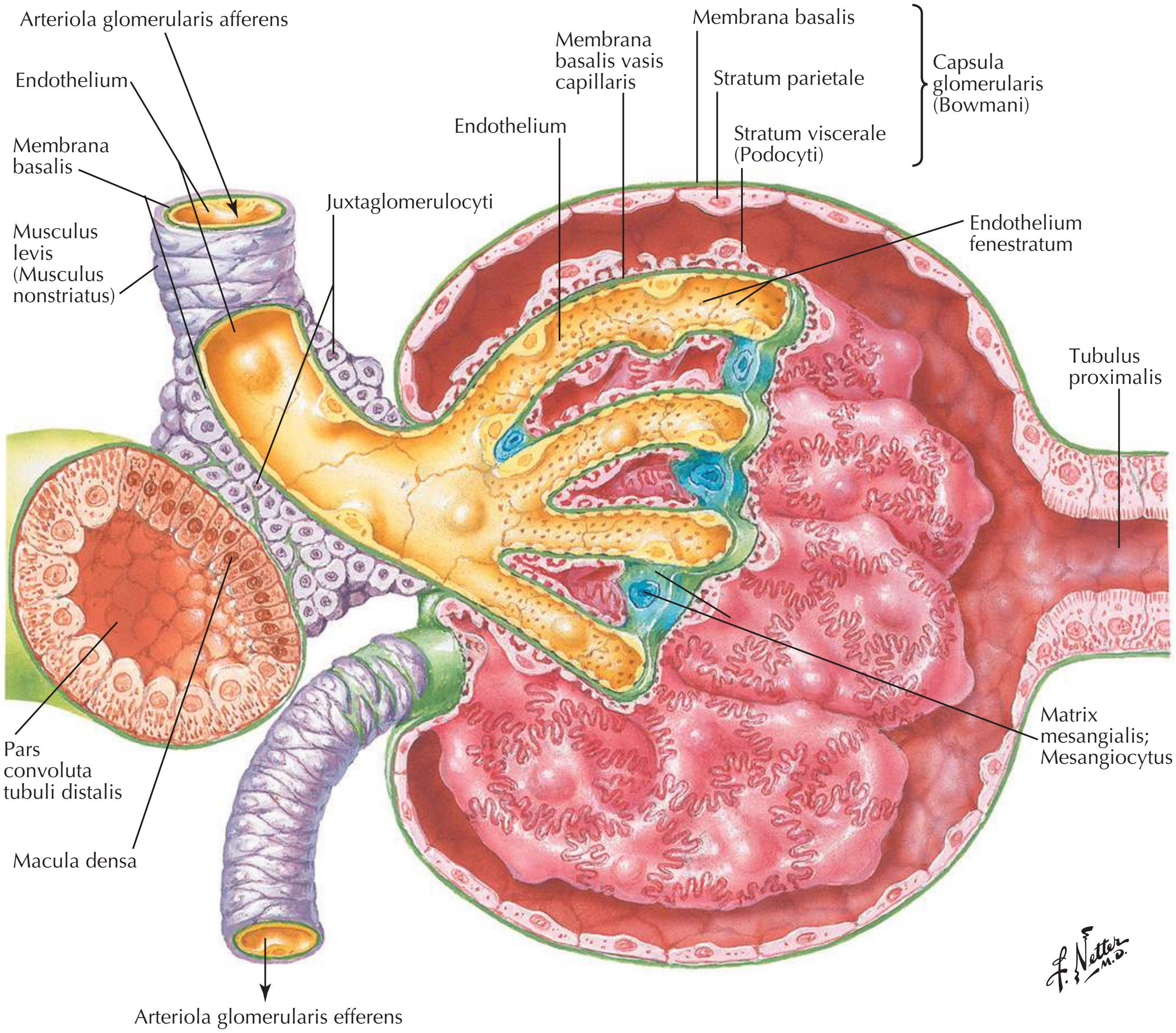
Two Vv. renales sinistrae may form ring around Aorta abdominalis



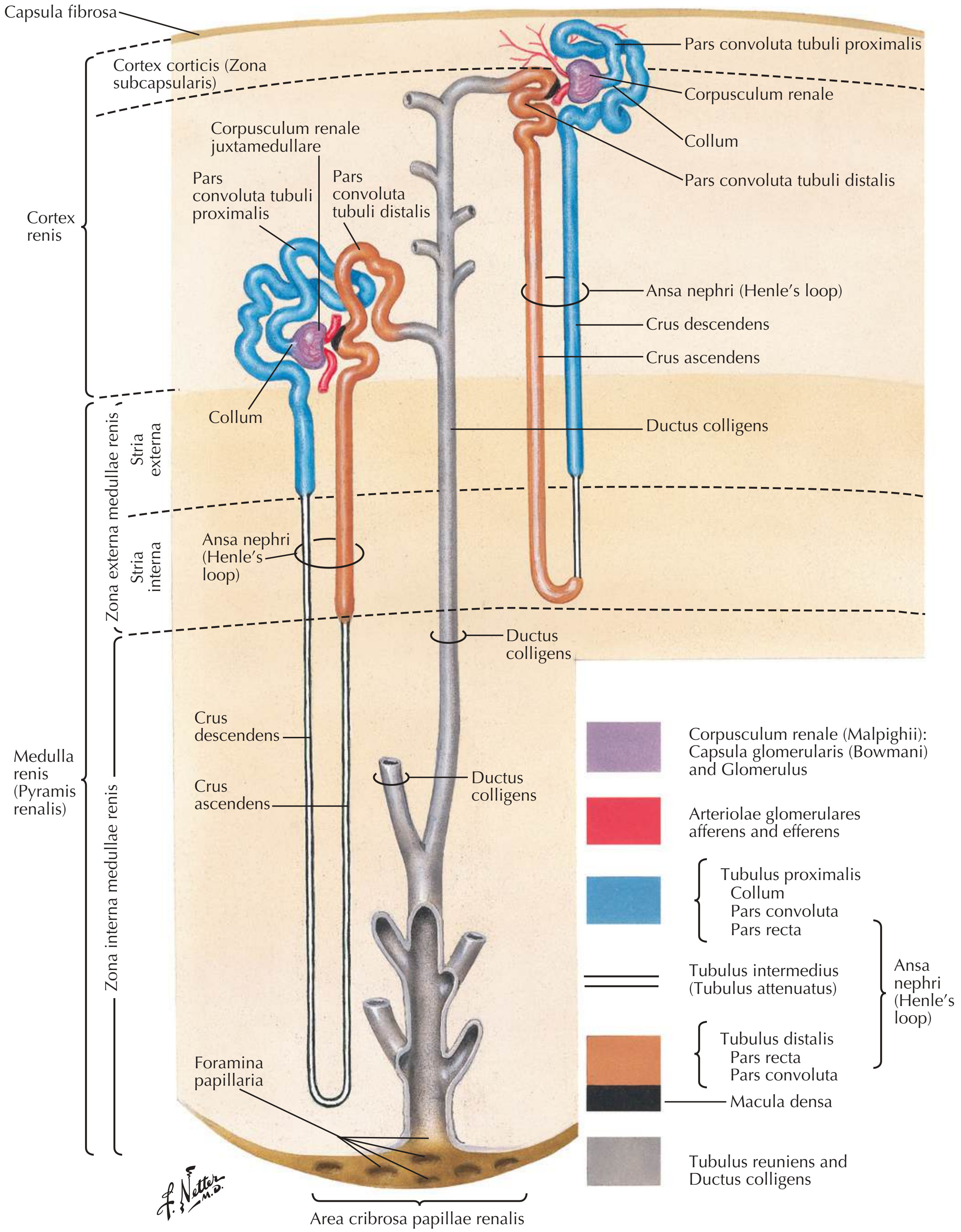
Multiple Vv. renales

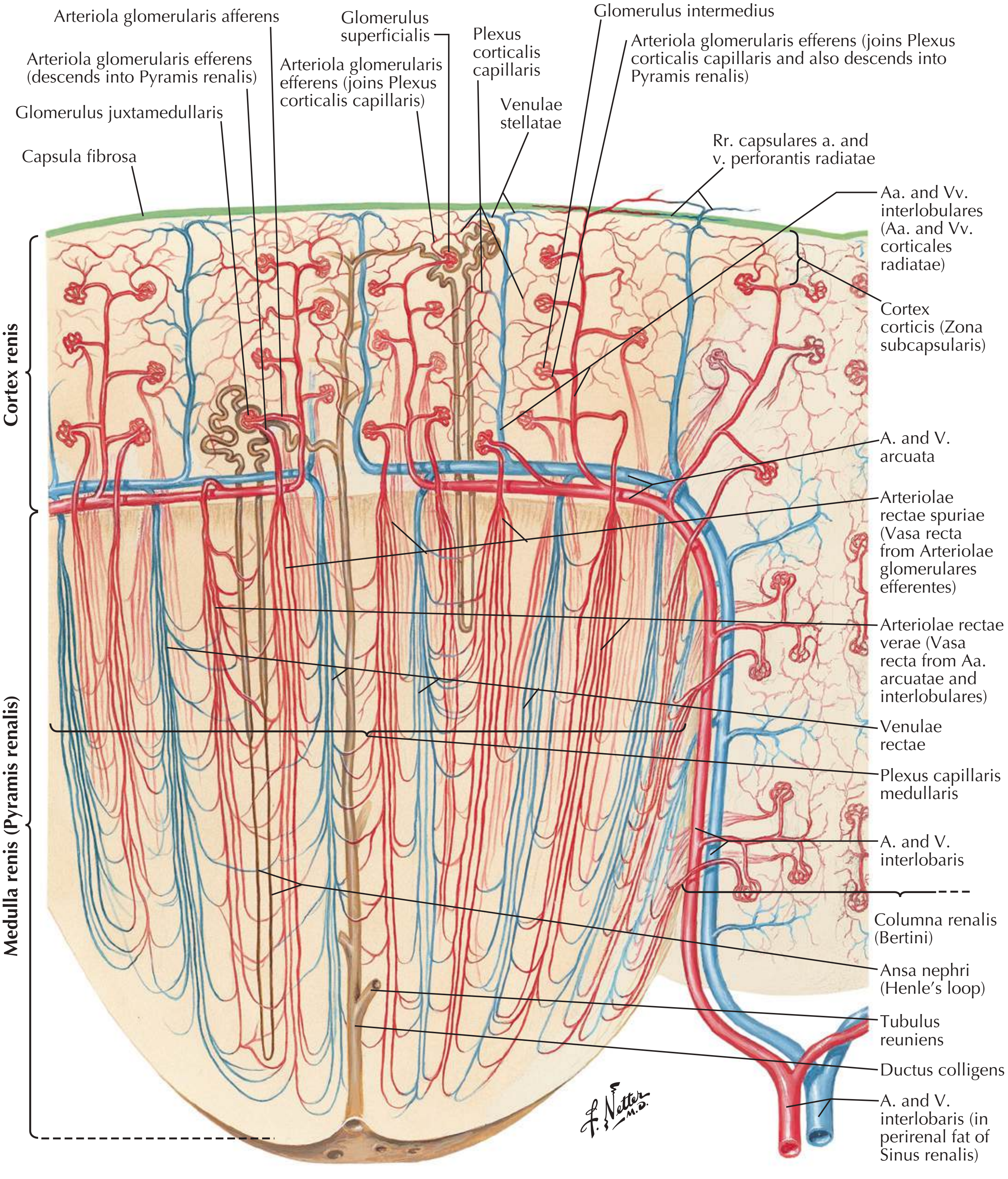


Persistent V. cava inferior sinistra may join V. renalis sinistra

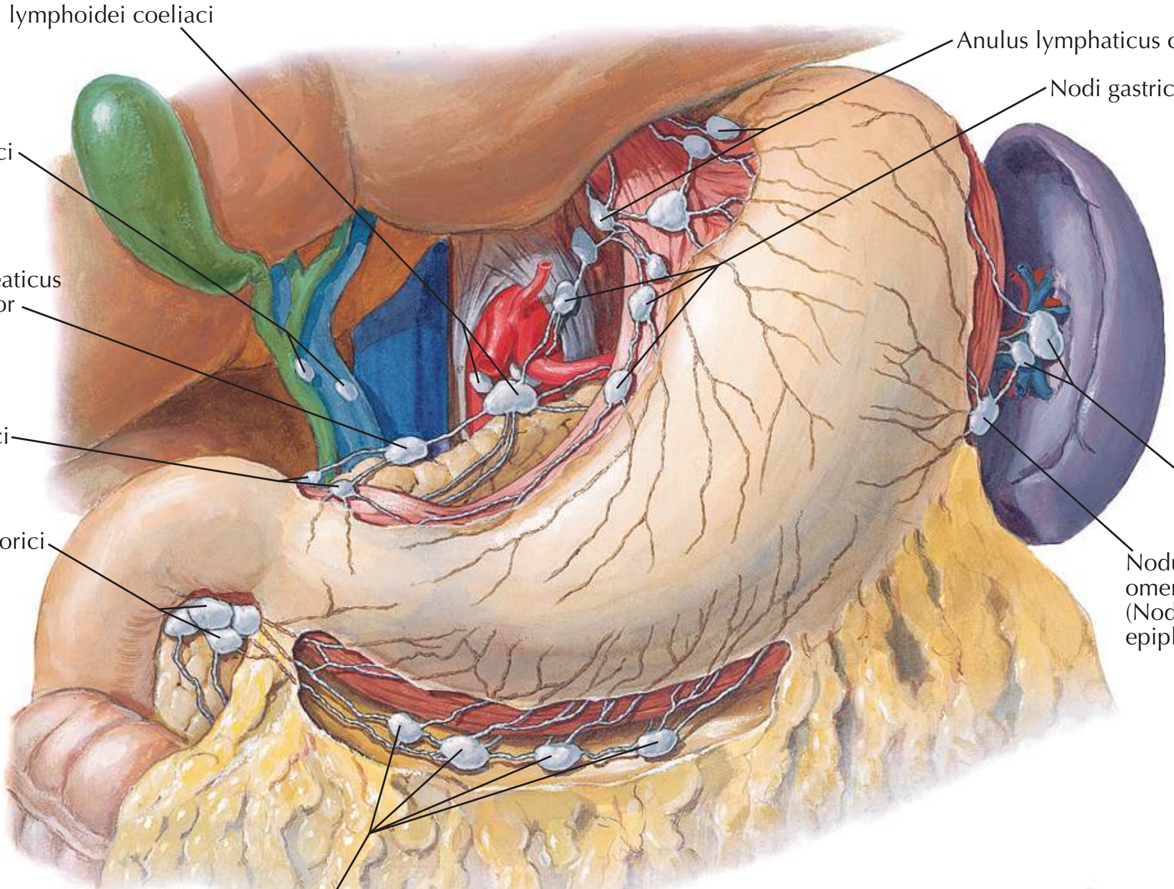

Arteriola glomerularis afferens
Endothelium
Membrana basalis
Musculus levis (Musculus nonstriatus)
Juxtaglomerulocyti
Endothelium
Membrana basalis vasis capillaris
Membrana basalis
Stratum parietale
Stratum viscerale (Podocyti)
Capsula glomerularis (Bowmani)
Endothelium fenestratum
Tubulus proximalis
Matrix mesangialis; Mesangiocytus
Pars convoluta tubuli distalis
Macula densa
Arteriola glomerularis efferens
F. Netter M.D.

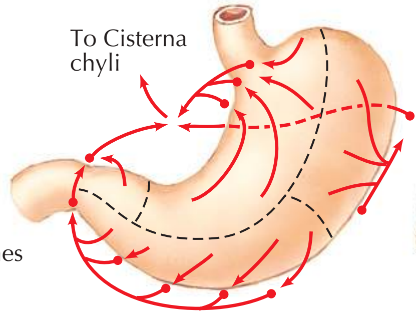
Nephron and Collecting Tubule: Schema


Capsula fibrosa
Cortex corticis (Zona subcapsularis)
Cortex renis
Corpusculum renale juxtamedullare
Pars convoluta tubuli proximalis
Pars convoluta tubuli distalis
Collum
Pars convoluta tubuli proximalis
Corpusculum renale
Collum
Pars convoluta tubuli distalis
Ansa nephri (Henle's loop)
Crus descendens
Crus ascendens
Ductus colligens
Zona externa medullae renis
Stria externa
Stria interna
Ansa nephri (Henle's loop)
Ductus colligens
Medulla renis (Pyramis renalis)
Zona interna medullae renis
Crus descendens
Crus ascendens
Ductus colligens
Foramina papillaria
Area cribrosa papillae renalis
Corpusculum renale (Malpighii): Capsula glomerularis (Bowmani) and Glomerulus
Arteriolae glomerulares afferens and efferens
Tubulus proximalis
Collum
Pars convoluta
Pars recta
Tubulus intermedius (Tubulus attenuatus)
Ansa nephri (Henle's loop)
Tubulus distalis
Pars recta
Pars convoluta
Macula densa
Tubulus reuniens and Ductus colligens
F. Netter M.D.

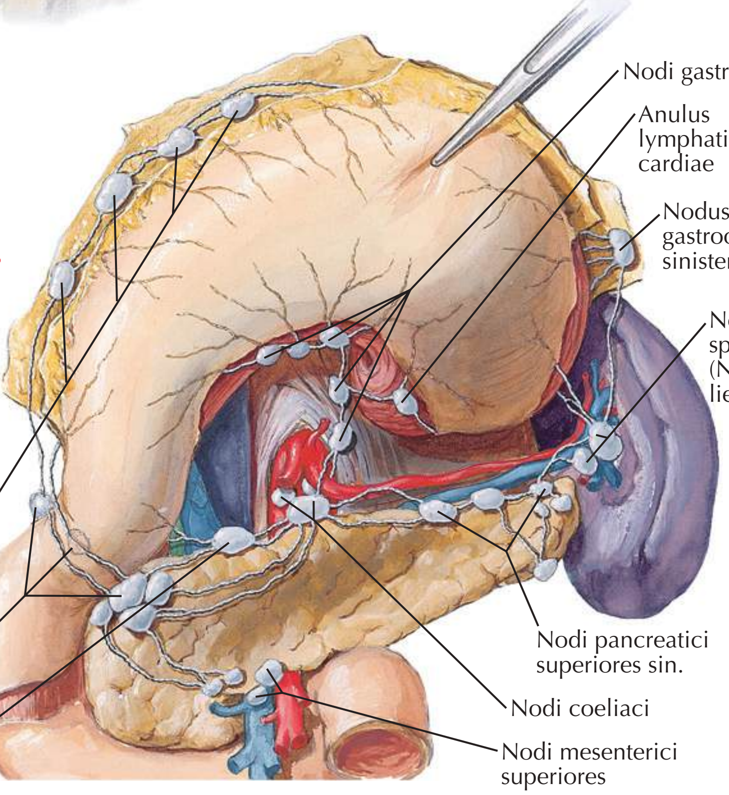

Arteriola glomerularis afferens
Glomerulus superficialis
Plexus corticalis capillaris
Glomerulus intermedius
Arteriola glomerularis efferens (descends into Pyramis renalis)
Arteriola glomerularis efferens (joins Plexus corticalis capillaris)
Arteriola glomerularis efferens (joins Plexus corticalis capillaris and also descends into Pyramis renalis)
Venulae stellatae
Glomerulus juxtamedullaris
Capsula fibrosa
Rr. capsulares a. and v. perforantis radiatae
Aa. and Vv. interlobulares (Aa. and Vv. corticales radiatae)
Cortex corticis (Zona subcapsularis)
Cortex renis
A. and V. arcuata
Arteriolae rectae spuriae (Vasa recta from Arteriolae glomerulares efferentes)
Arteriolae rectae verae (Vasa recta from Aa. arcuatae and interlobulares)
Venulae rectae
Medulla renis (Pyramis renalis)
Plexus capillaris medullaris
A. and V. interlobaris
Columna renalis (Bertini)
Ansa nephri (Henle's loop)
Tubulus reuniens
Ductus colligens
A. and V. interlobaris (in perirenal fat of Sinus renalis)
F. Netter M.D.

Lymph Vessels and Nodes of Stomach

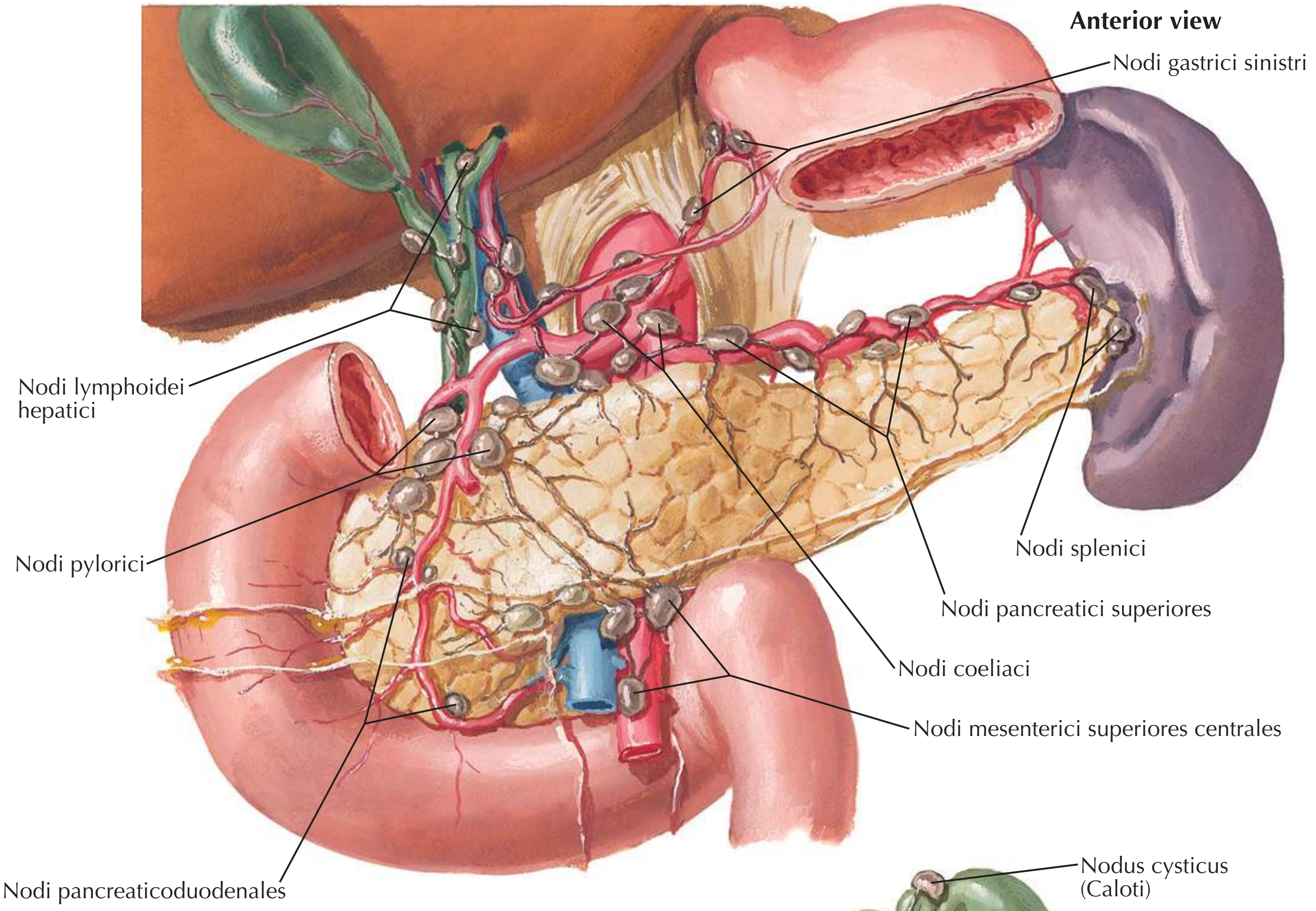

Nodi lymphoidei coeliaci
Anulus lymphaticus cardiae
Nodi gastrici sin.
Nodi hepatici
Nodus pancreaticus superior
Nodi supra-pylorici
Nodi subpylorici
Nodi splenici
Nodus gastro-omentalis sinister (Nodus gastro-epiploicus sinister)
Nodi gastroomentales dextri (Nodi gastroepiploici dextri)


To Cisterna chyli

Zones and pathways of gastric lymph drainage (zones not sharply demarcated)

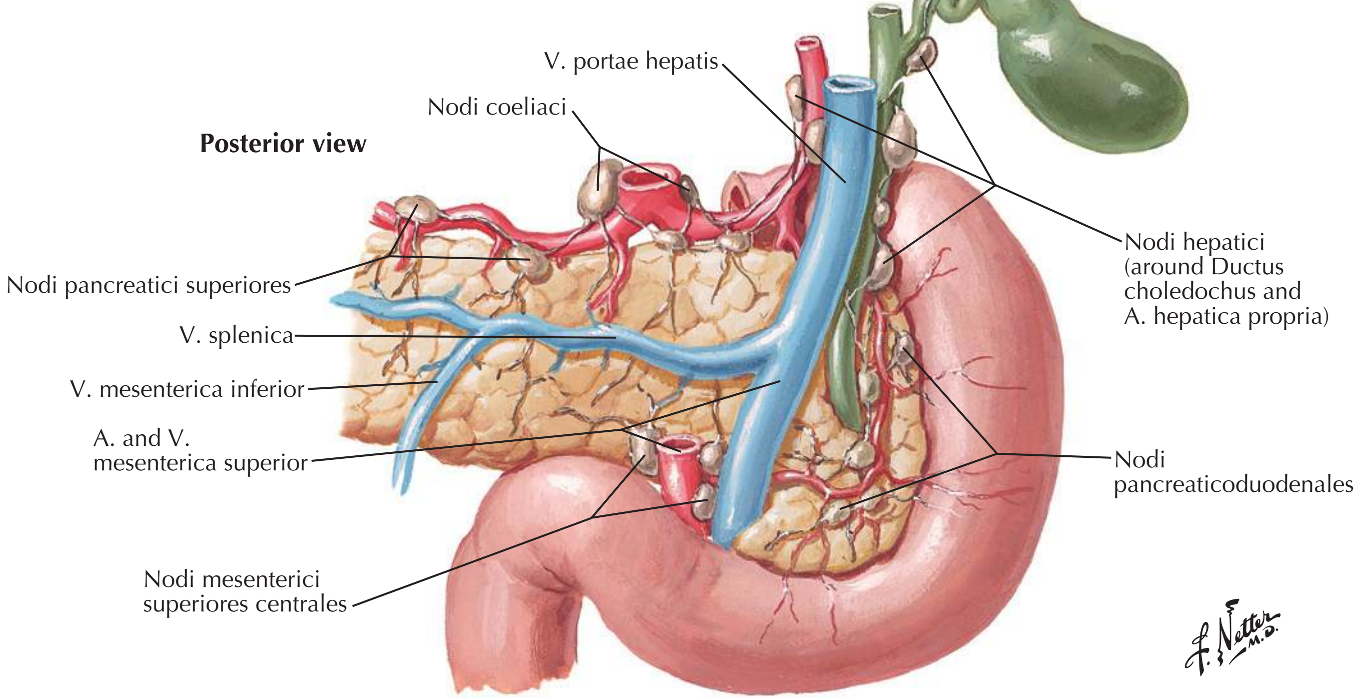

Nodi gastrici sinistri
Anulus lymphaticus cardiae
Nodus gastroomentalis sinister
Nodi splenici (Nodi lienales)
Nodi gastroomentales dextri
Nodi suprapyloricus, retropyloricus and subpylorici
Nodus pancreaticus superior dex.
Nodi pancreatici superiores sin.
Nodi coeliaci
Nodi mesenterici superiores

Lymph Vessels and Nodes of Pancreas



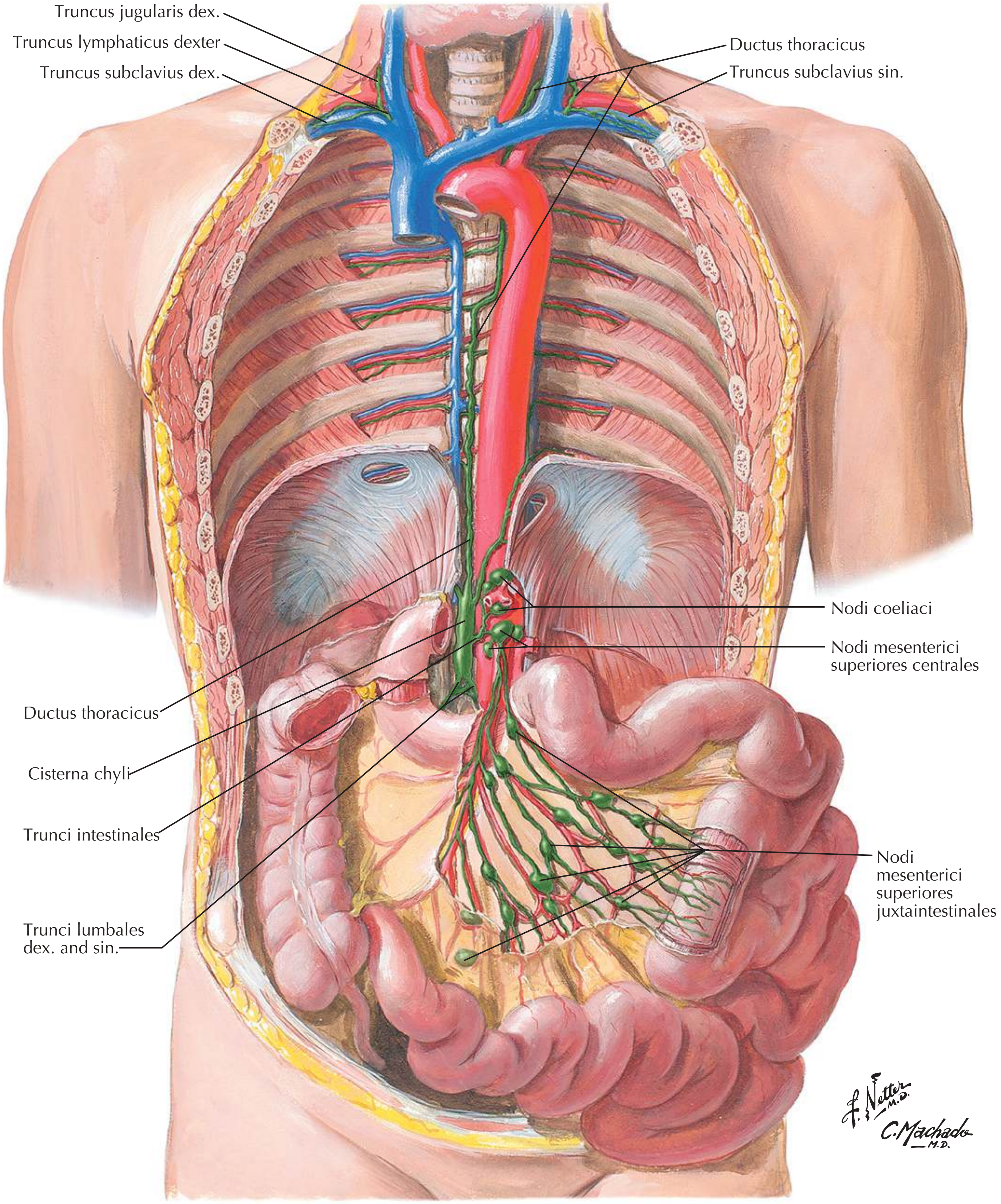
Anterior view

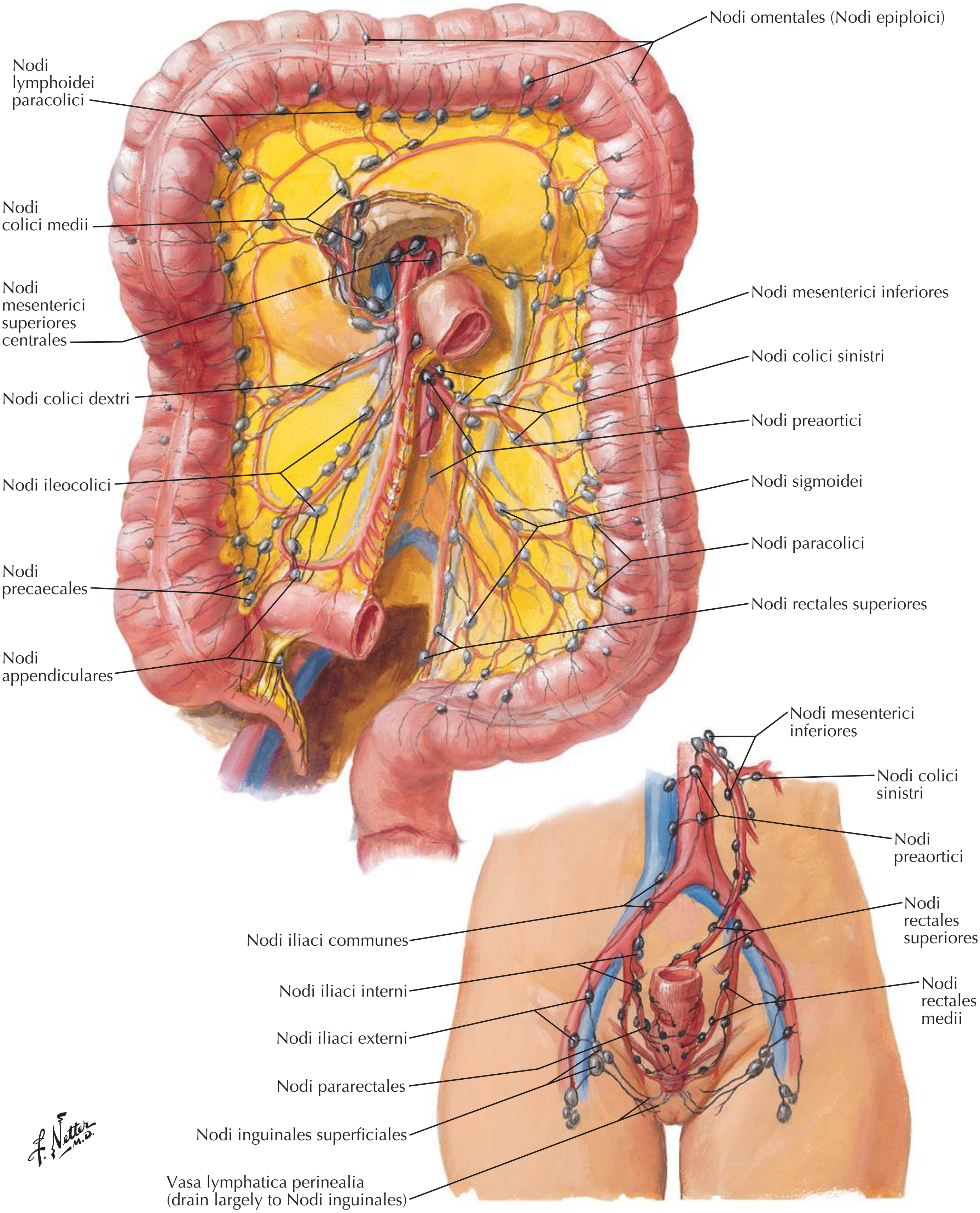
Nodi gastrici sinistri
Nodi lymphoidei hepatici
Nodi pylorici
Nodi splenici
Nodi pancreatici superiores
Nodi coeliaci
Nodi mesenterici superiores centrales
Nodi pancreaticoduodenales



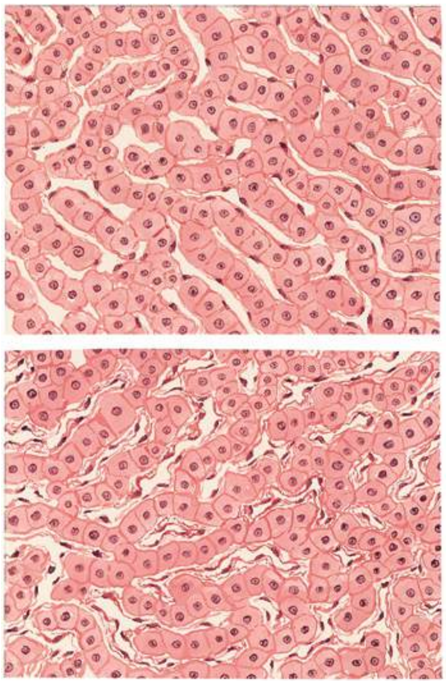
Posterior view

Nodus cysticus (Caloti)
V. portae hepatis
Nodi coeliaci
Nodi pancreatici superiores
V. splenica
V. mesenterica inferior
A. and V. mesenterica superior
Nodi mesenterici superiores centrales
Nodi hepatici (around Ductus choledochus and A. hepatica propria)
Nodi pancreaticoduodenales


Truncus jugularis dex.
Truncus lymphaticus dexter
Truncus subclavius dex.
Ductus thoracicus
Truncus subclavius sin.
Nodi coeliaci
Nodi mesenterici superiores centrales
Ductus thoracicus
Cisterna chyli
Trunci intestinales
Nodi mesenterici superiores juxtaintestinales
Trunci lumbales dex. and sin.
F. Netter M.D.
C. Machado M.D.


Nodi omentales (Nodi epiploici)
Nodi lymphoidei paracolici
Nodi colici medii
Nodi mesenterici superiores centrales
Nodi mesenterici inferiores
Nodi colici sinistri
Nodi colici dextri
Nodi preaortici
Nodi ileocolici
Nodi sigmoidei
Nodi paracolici
Nodi precaecales
Nodi rectales superiores
Nodi appendiculares
Nodi mesenterici inferiores
Nodi colici sinistri
Nodi preaortici
Nodi rectales superiores
Nodi iliaci communes
Nodi iliaci interni
Nodi rectales medii
Nodi iliaci externi
Nodi pararectales
Nodi inguinales superficiales
Vasa lymphatica perinealia (drain largely to Nodi inguinales)
F. Netter M.D.

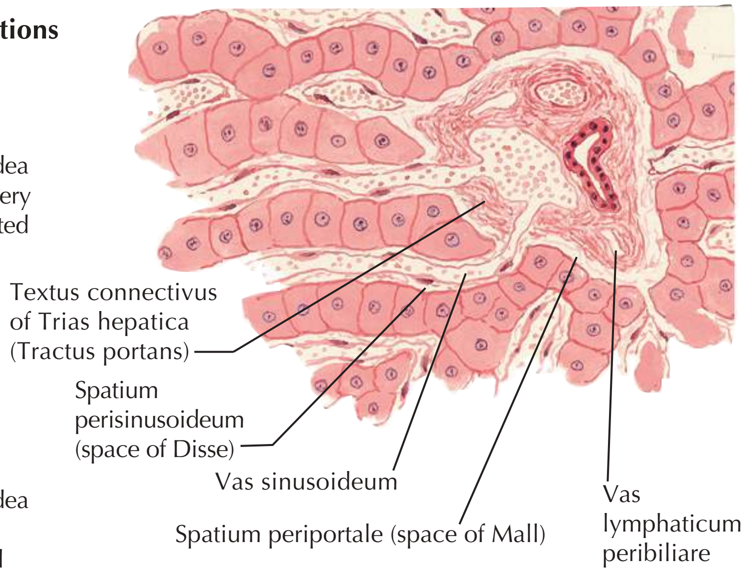
Lymph Vessels and Nodes of Liver

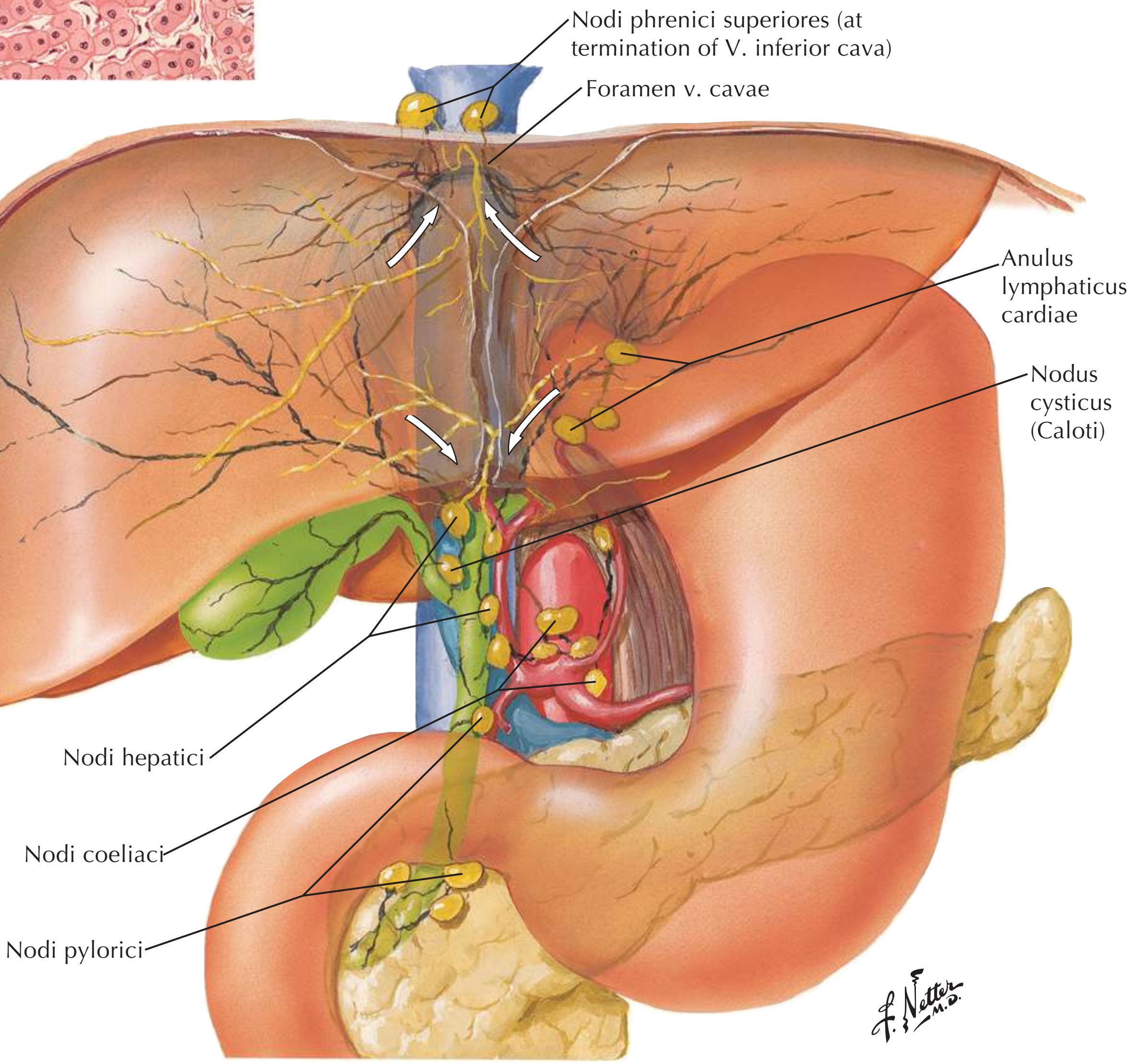


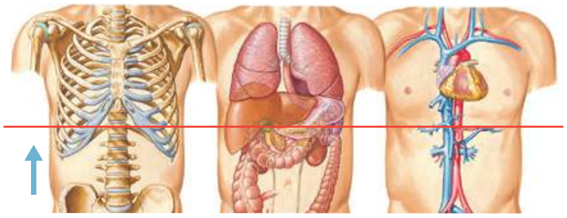
Low-power sections of liver

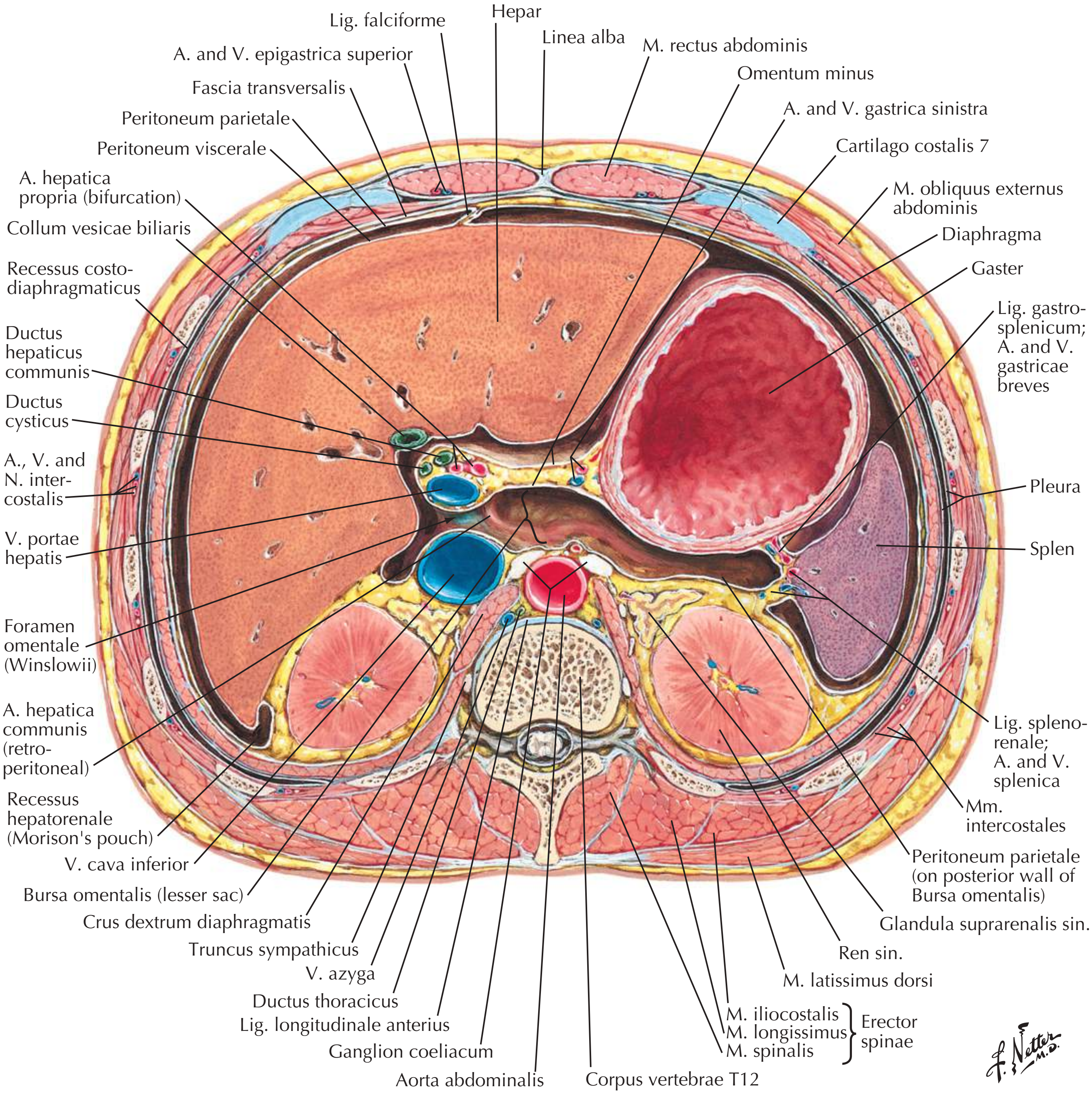
Spatia perisinusoidea (spaces of Disse) very narrow or obliterated

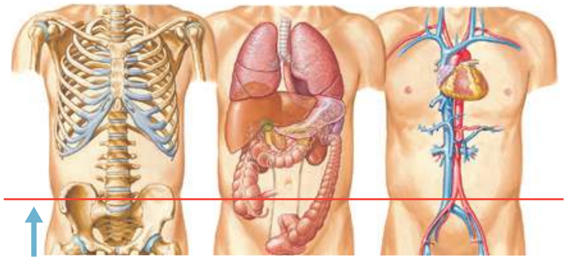
Spatia perisinusoidea (spaces of Disse) markedly widened

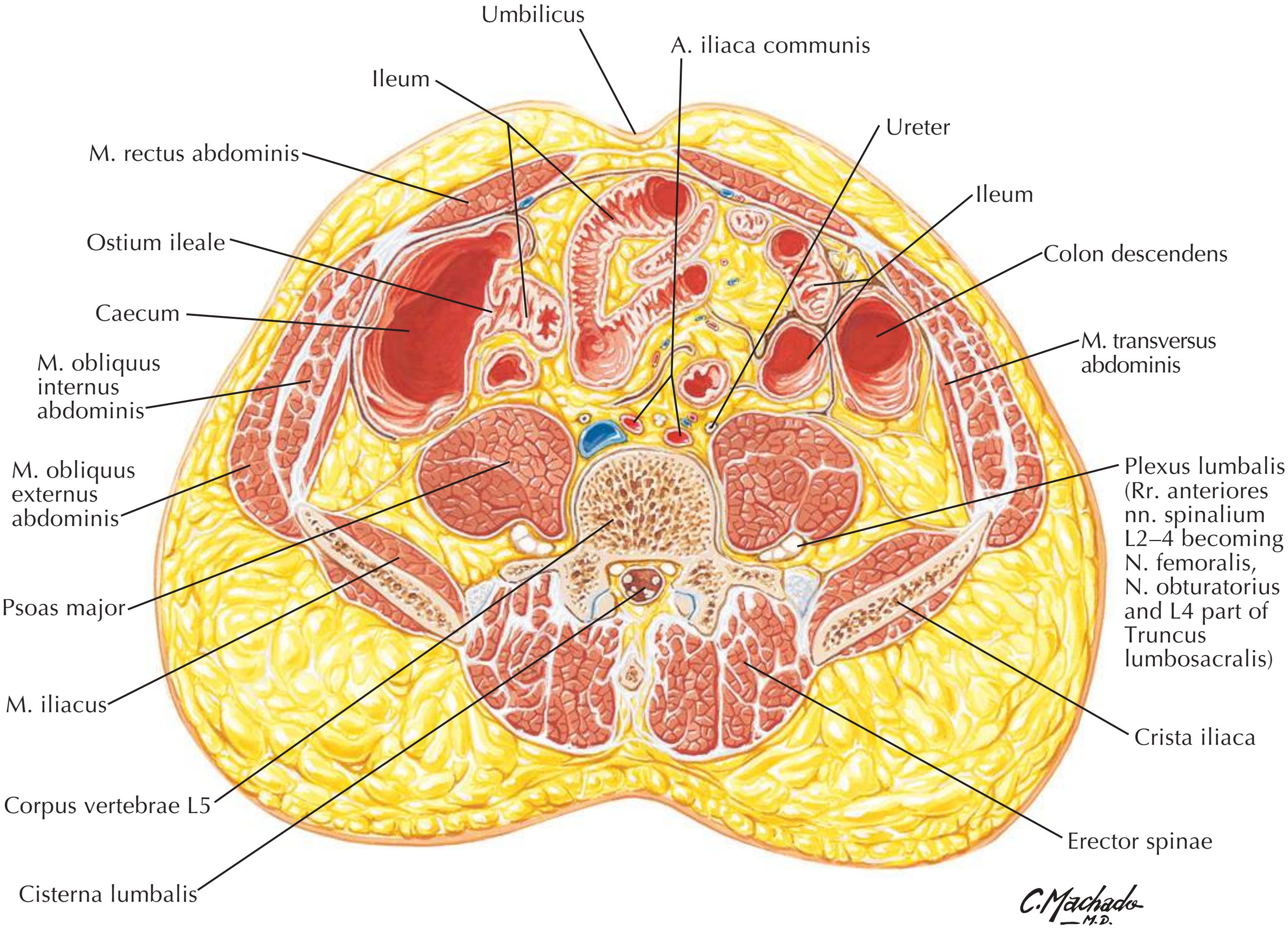

Textus connectivus of Trias hepatica (Tractus portans)
Spatium perisinusoideum (space of Disse)
Vas sinusoideum
Spatium periportale (space of Mall)
Vas lymphaticum peribiliare


Nodi phrenici superiores (at termination of V. inferior cava)
Foramen v. cavae
Anulus lymphaticus cardiae
Nodus cysticus (Caloti)
Nodi hepatici
Nodi coeliaci
Nodi pylorici

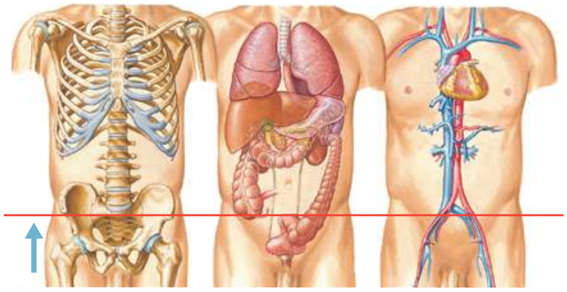


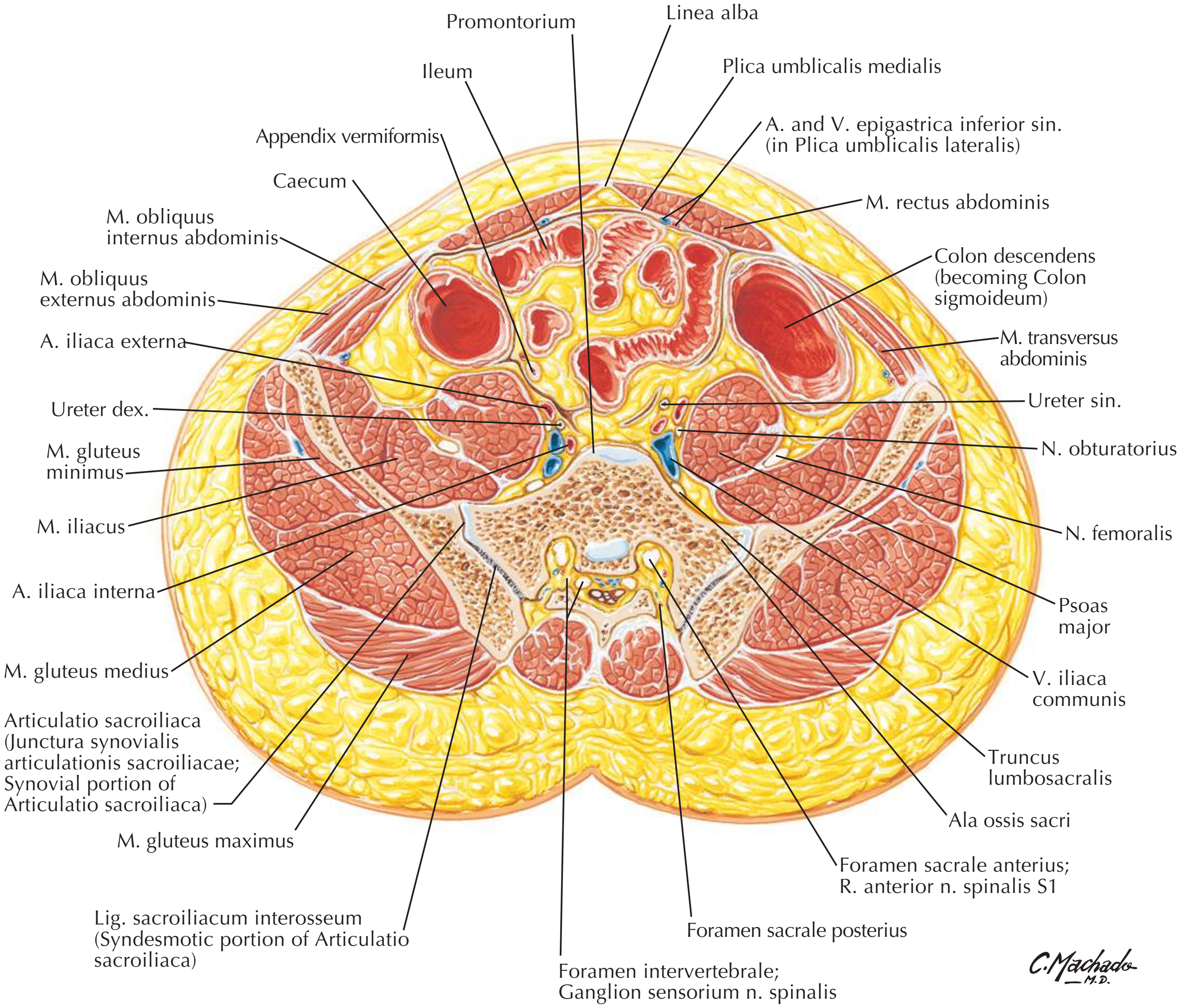

Lig. falciforme
Hepar
Linea alba
A. and V. epigastrica superior
M. rectus abdominis
Fascia transversalis
Omentum minus
Peritoneum parietale
A. and V. gastrica sinistra
Peritoneum viscerale
Cartilago costalis 7
A. hepatica propria (bifurcation)
M. obliquus externus abdominis
Collum vesicae biliaris
Diaphragma
Recessus costodiaphragmaticus
Gaster
Ductus hepaticus communis
Lig. gastrosplenicum; A. and V. gastricae breves
Ductus cysticus
A., V. and N. intercostalis
Pleura
V. portae hepatis
Splen
Foramen omentale (Winslowii)
A. hepatica communis (retroperitoneal)
Lig. splenorenale; A. and V. splenica
Recessus hepatorenale (Morison's pouch)
Mm. intercostales
V. cava inferior
Peritoneum parietale (on posterior wall of Bursa omentalis)
Bursa omentalis (lesser sac)
Crus dextrum diaphragmatis
Glandula suprarenalis sin.
Truncus sympathicus
Ren sin.
V. azyga
M. latissimus dorsi
Ductus thoracicus
Lig. longitudinale anterius
M. iliocostalis
M. longissimus
M. spinalis
Erector spinae
Ganglion coeliacum
Aorta abdominalis
Corpus vertebrae T12
F. Netter M.D.



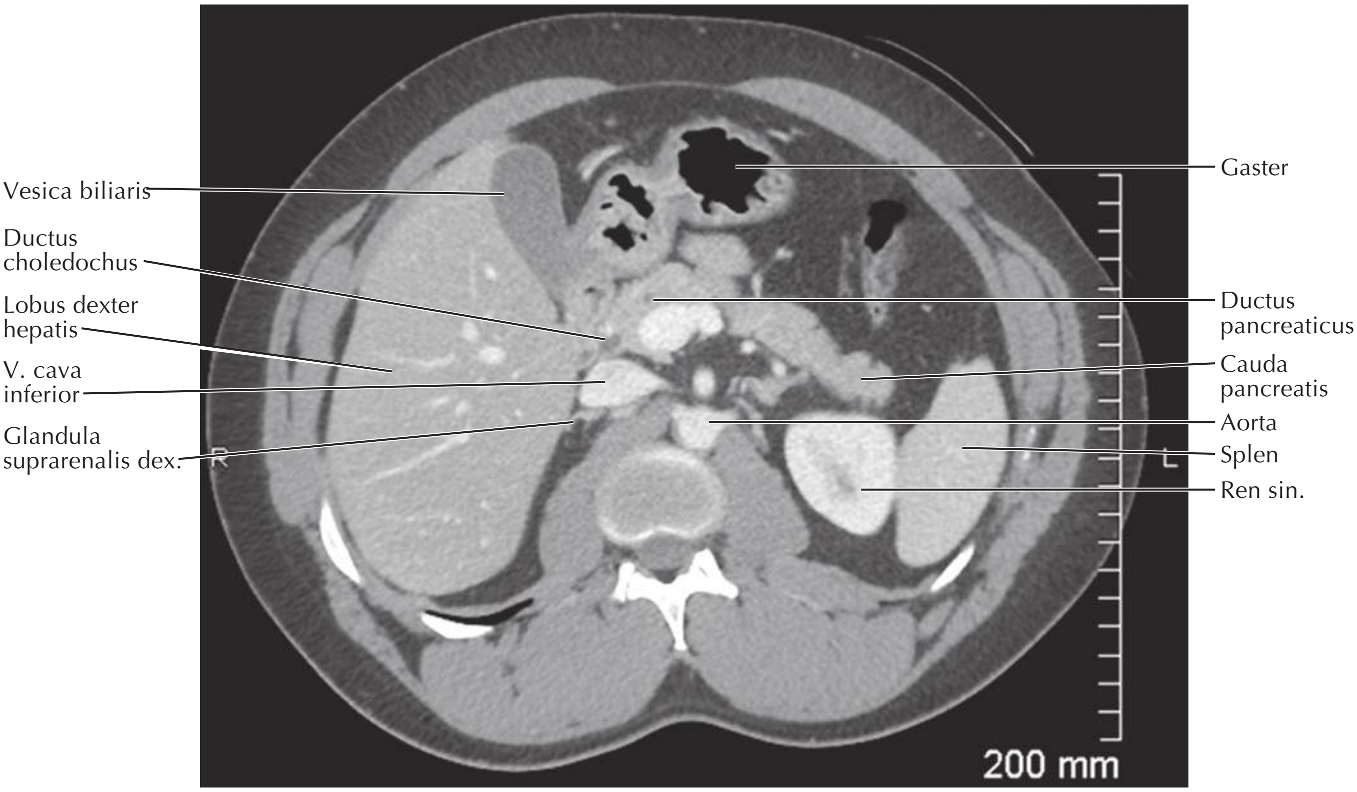

Umbilicus
A. iliaca communis
Ileum
Ureter
M. rectus abdominis
Ileum
Ostium ileale
Colon descendens
Caecum
M. transversus abdominis
M. obliquus internus abdominis
M. obliquus externus abdominis
Plexus lumbalis (Rr. anteriores nn. spinalium L2–4 becoming N. femoralis, N. obturatorius and L4 part of Truncus lumbosacralis)
Psoas major
M. iliacus
Crista iliaca
Corpus vertebrae L5
Erector spinae
Cisterna lumbalis
C. Machado M.D.

Transverse Section of Abdomen: Level of S1, Anterior Superior Iliac Spine




Promontorium
Linea alba
Ileum
Plica umblicalis medialis
Appendix vermiformis
A. and V. epigastrica inferior sin. (in Plica umblicalis lateralis)
Caecum
M. rectus abdominis
M. obliquus internus abdominis
M. obliquus externus abdominis
Colon descendens (becoming Colon sigmoideum)
A. iliaca externa
M. transversus abdominis
Ureter dex.
Ureter sin.
M. gluteus minimus
N. obturatorius
M. iliacus
N. femoralis
A. iliaca interna
Psoas major
M. gluteus medius
V. iliaca communis
Articulatio sacroiliaca (Junctura synovialis articulationis sacroiliacae; Synovial portion of Articulatio sacroiliaca)
Truncus lumbosacralis
Ala ossis sacri
M. gluteus maximus
Foramen sacrale anterius; R. anterior n. spinalis S1
Lig. sacroiliacum interosseum (Syndesmotic portion of Articulatio sacroiliaca)
Foramen sacrale posterius
Foramen intervertebrale; Ganglion sensorium n. spinalis
C.Machado M.D.

Axial CT image enhanced with intravenous contrast

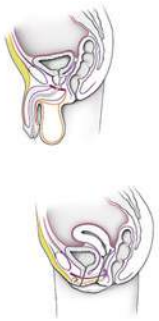

Vesica biliaris
Ductus choledochus
Lobus dexter hepatis
V. cava inferior
Glandula suprarenalis dex.
R
Gaster
Ductus pancreaticus
Cauda pancreatis
Aorta
Splen
Ren sin.
L
200 mm

PELVIS AND PERINEUM

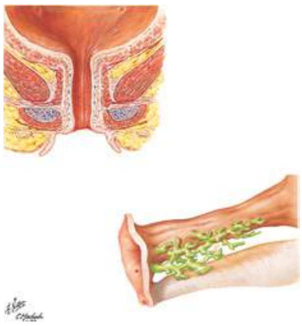
6

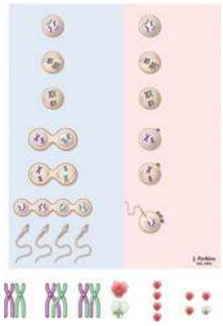
Surface Anatomy 333
Bones and Ligaments 334-338
Pelvic Floor and Contents 339-349
Urinary Bladder 350-352
Uterus, Vagina, and Supporting Structures 353-357
Perineum and External Genitalia: Female 358-361
Perineum and External Genitalia: Male 362-369
Homologues of Genitalia 370-371
Testis, Epididymis, and Ductus Deferens 372
Rectum 373-378
Regional Scan 379
Vasculature 380-390
Innervation 391-399
Cross-Sectional Anatomy 400-401
Structures with High Clinical Significance Tables 6.1-6.2
Muscle Tables Tables 6.3-6.4
Electronic Bonus Plates BP88-BP98

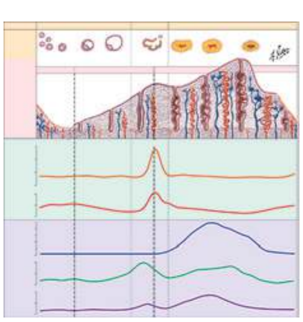
ELECTRONIC BONUS PLATES


BP88 Fasciae of Male and Female Pelvis and Perineum

BP89 Male and Female Cystourethrograms

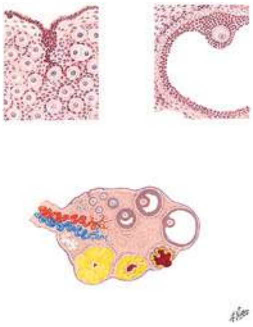

BP90 Female Urethra


BP91 Genetics of Reproduction


BP92 Menstrual Cycle

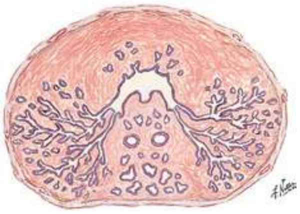
BP93 Testes

BP94 Uterine Development

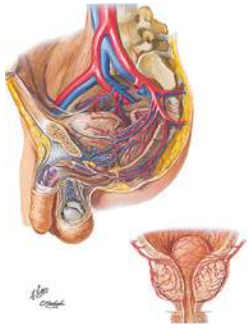

BP95 Ovary, Oocytes, and Follicles

ELECTRONIC BONUS PLATES—*cont'd*

BP96 Variations in Hymen

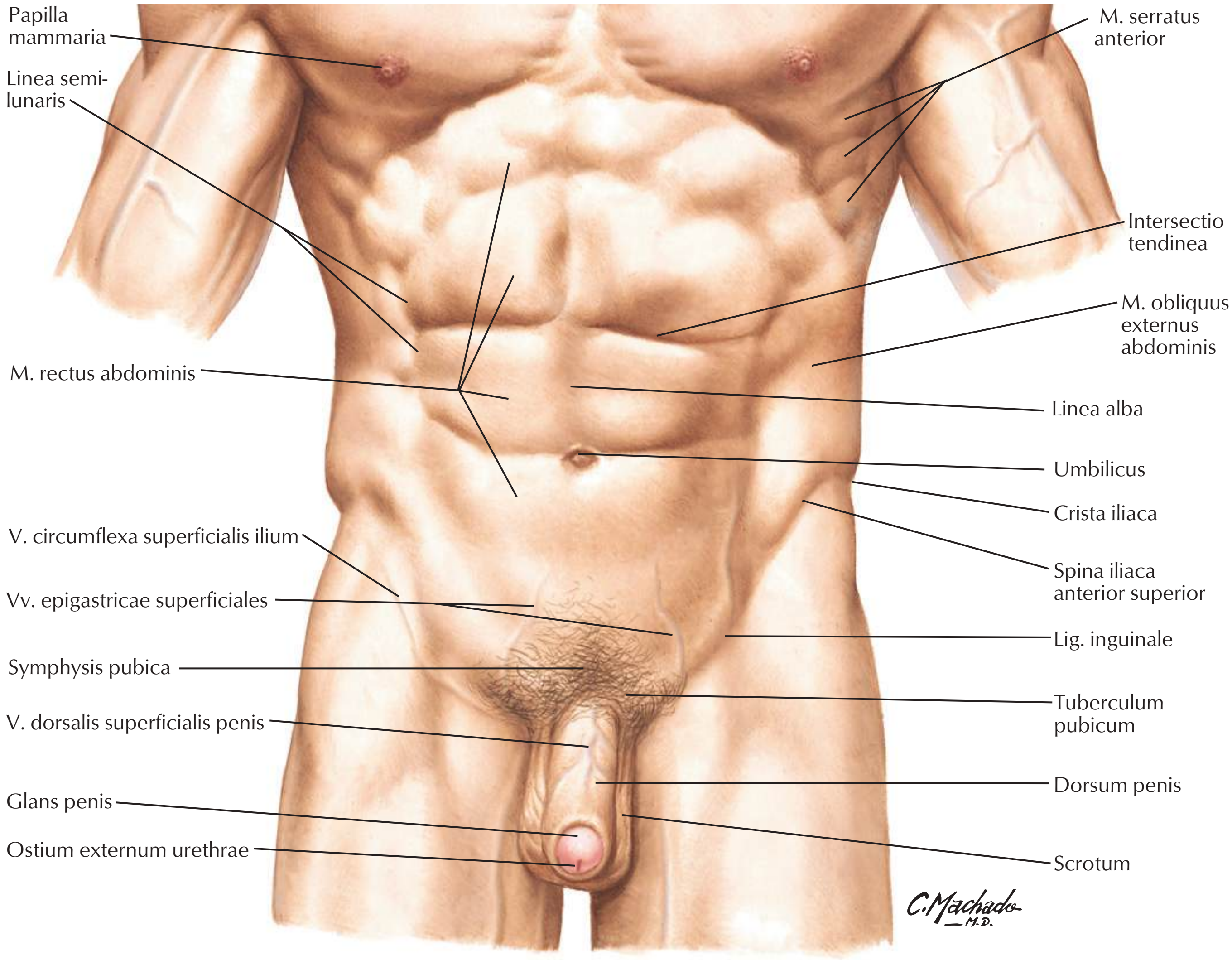


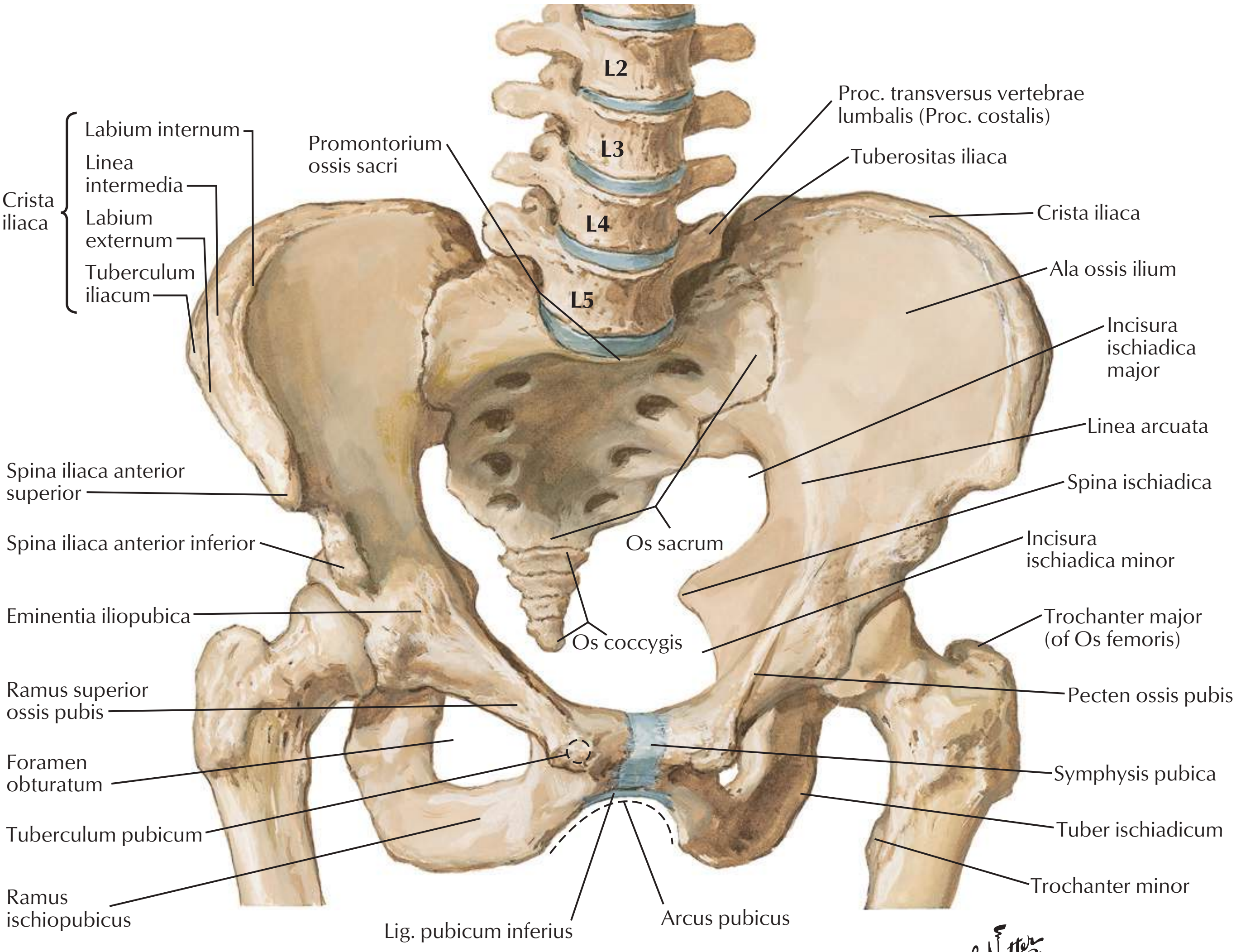
BP97 Cross Section Through Prostate



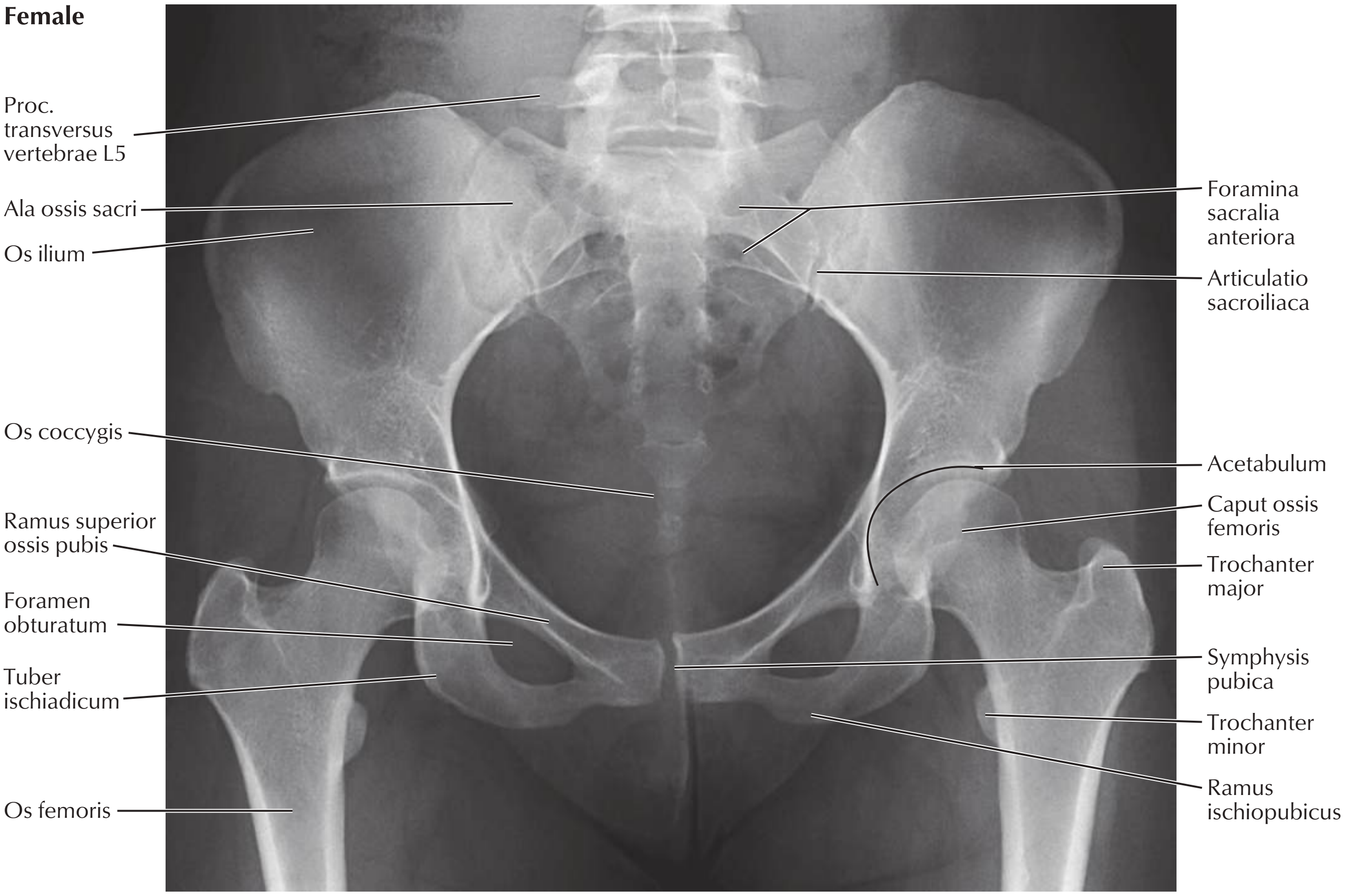
BP98 Arteries and Veins of Pelvis: Male

See also Plates 171, 252

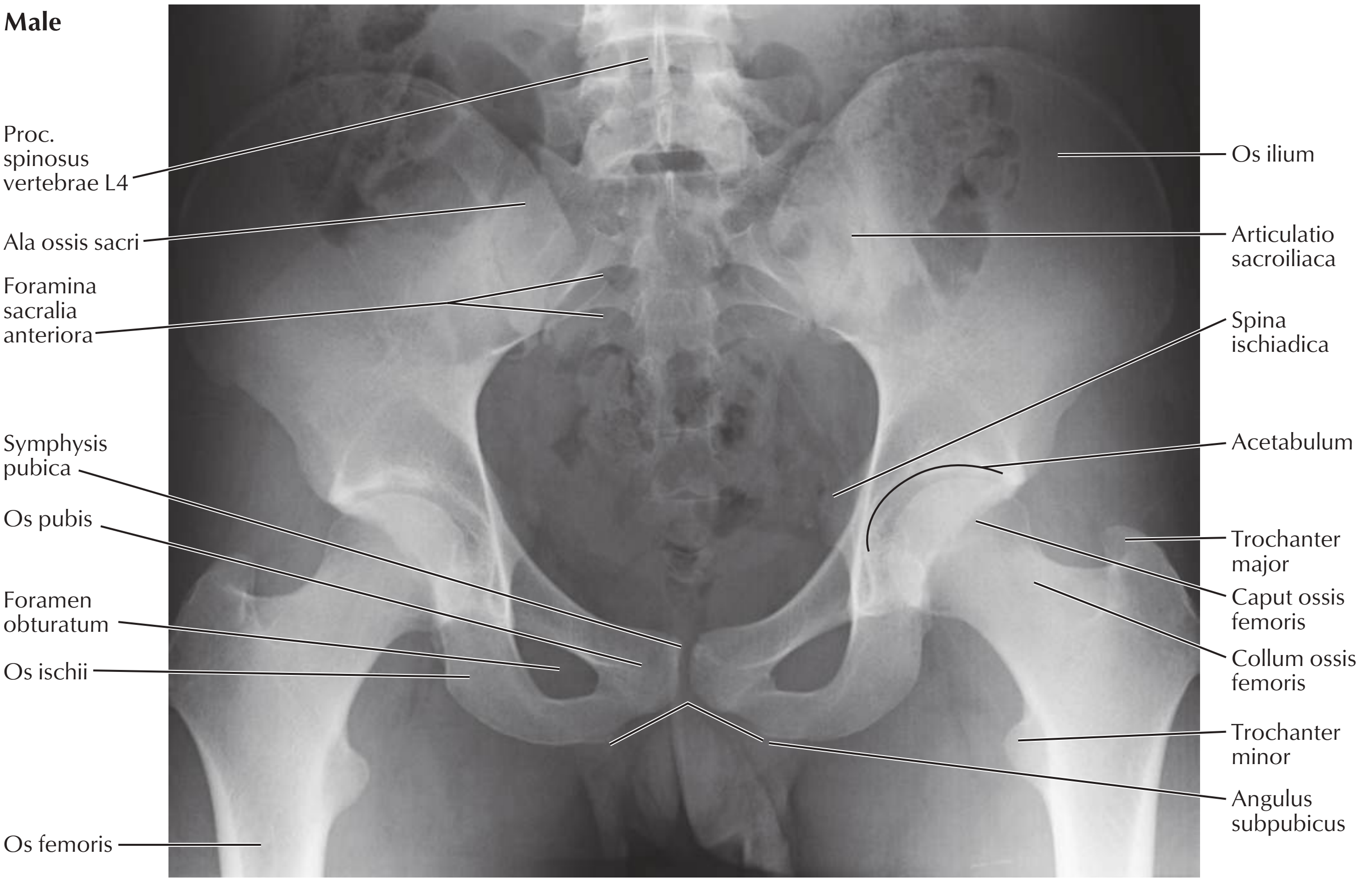

Papilla mammaria
Linea semilunaris
M. serratus anterior
Intersectio tendinea
M. obliquus externus abdominis
M. rectus abdominis
Linea alba
Umbilicus
Crista iliaca
V. circumflexa superficialis ilium
Spina iliaca anterior superior
Vv. epigastricae superficiales
Lig. inguinale
Symphysis pubica
Tuberculum pubicum
V. dorsalis superficialis penis
Dorsum penis
Glans penis
Ostium externum urethrae
Scrotum
C.Machado M.D.


L2
L3
L4
L5
Crista iliaca
Labium internum
Linea intermedia
Labium externum
Tuberculum iliacum
Promontorium ossis sacri
Proc. transversus vertebrae lumbalis (Proc. costalis)
Tuberositas iliaca
Crista iliaca
Ala ossis ilium
Incisura ischiadica major
Linea arcuata
Spina ischiadica
Spina iliaca anterior superior
Spina iliaca anterior inferior
Os sacrum
Incisura ischiadica minor
Eminentia iliopubica
Os coccygis
Trochanter major (of Os femoris)
Ramus superior ossis pubis
Pecten ossis pubis
Foramen obturatum
Symphysis pubica
Tuberculum pubicum
Tuber ischiadicum
Trochanter minor
Ramus ischiopubicus
Lig. pubicum inferius
Arcus pubicus

Female

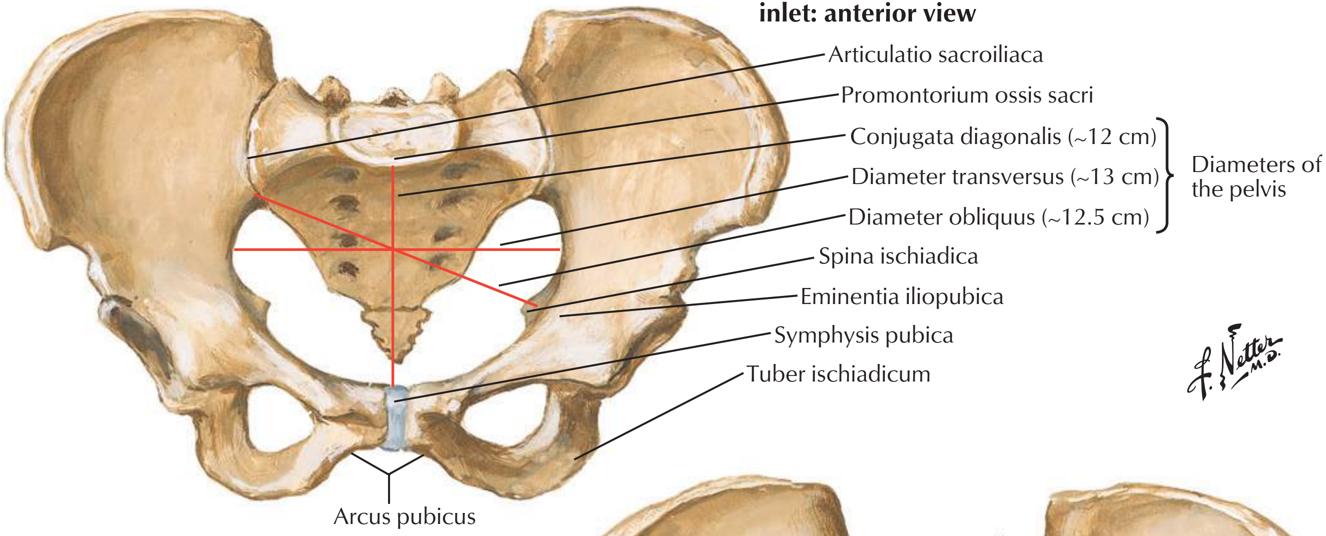

Proc. transversus vertebrae L5
Ala ossis sacri
Os ilium
Os coccygis
Ramus superior ossis pubis
Foramen obturatum
Tuber ischiadicum
Os femoris
Foramina sacralia anteriora
Articulatio sacroiliaca
Acetabulum
Caput ossis femoris
Trochanter major
Symphysis pubica
Trochanter minor
Ramus ischiopubicus

Male

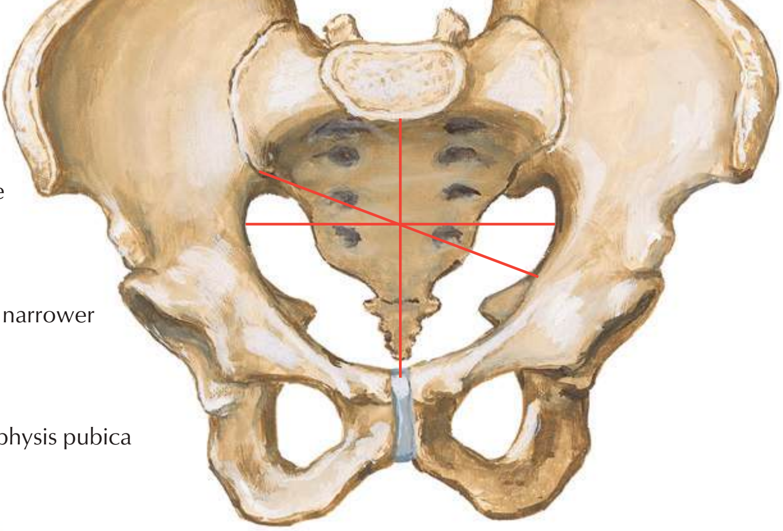

Proc. spinosus vertebrae L4
Ala ossis sacri
Foramina sacralia anteriora
Symphysis pubica
Os pubis
Foramen obturatum
Os ischii
Os femoris
Os ilium
Articulatio sacroiliaca
Spina ischiadica
Acetabulum
Trochanter major
Caput ossis femoris
Collum ossis femoris
Trochanter minor
Angulus subpubicus

Sex Differences of Pelvis: Measurements

See also Plate 250


Articulatio sacroiliaca
Promontorium ossis sacri
Conjugata diagonalis (~12 cm)
Diameter transversus (~13 cm)
Diameter obliquus (~12.5 cm)
Diameters of the pelvis
Spina ischiadica
Eminentia iliopubica
Symphysis pubica
Tuber ischiadicum
Arcus pubicus

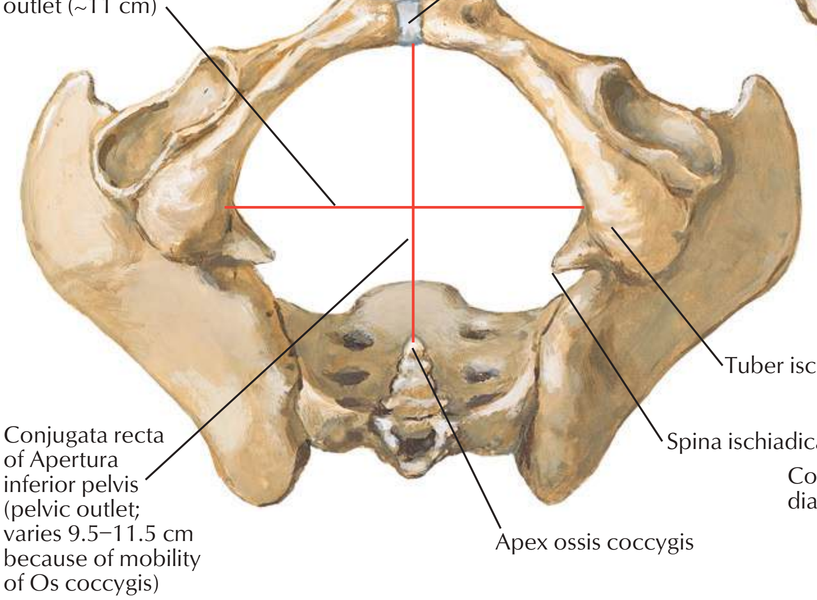
Female pelvis/female pelvic inlet: anterior view



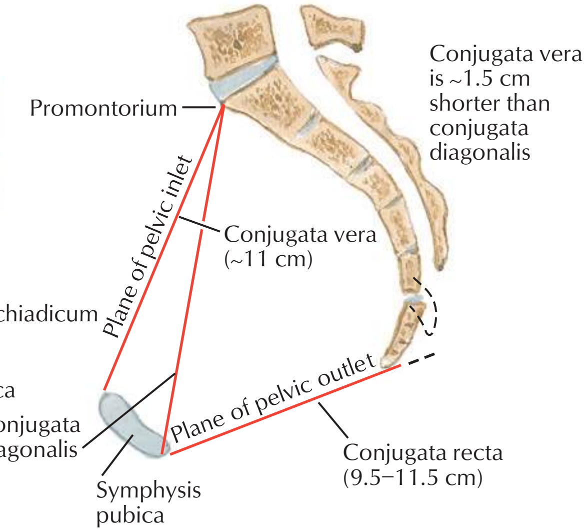
Male pelvis/male pelvic inlet: anterior view

Conjugata diagonalis is only diameter of apertura superior pelvis (pelvic inlet) that can be measured clinically

- All measurements slightly shorter in relation to body size than in female
- Pelvic inlet oriented more anteroposteriorly than in female, where it tends to be transversely oval
- Symphysis pubica deeper (taller)
- Arcus pubicus (angulus subpubicus) narrower
- Tubera ischiadica less far apart
- Alae ossium ilium less flared

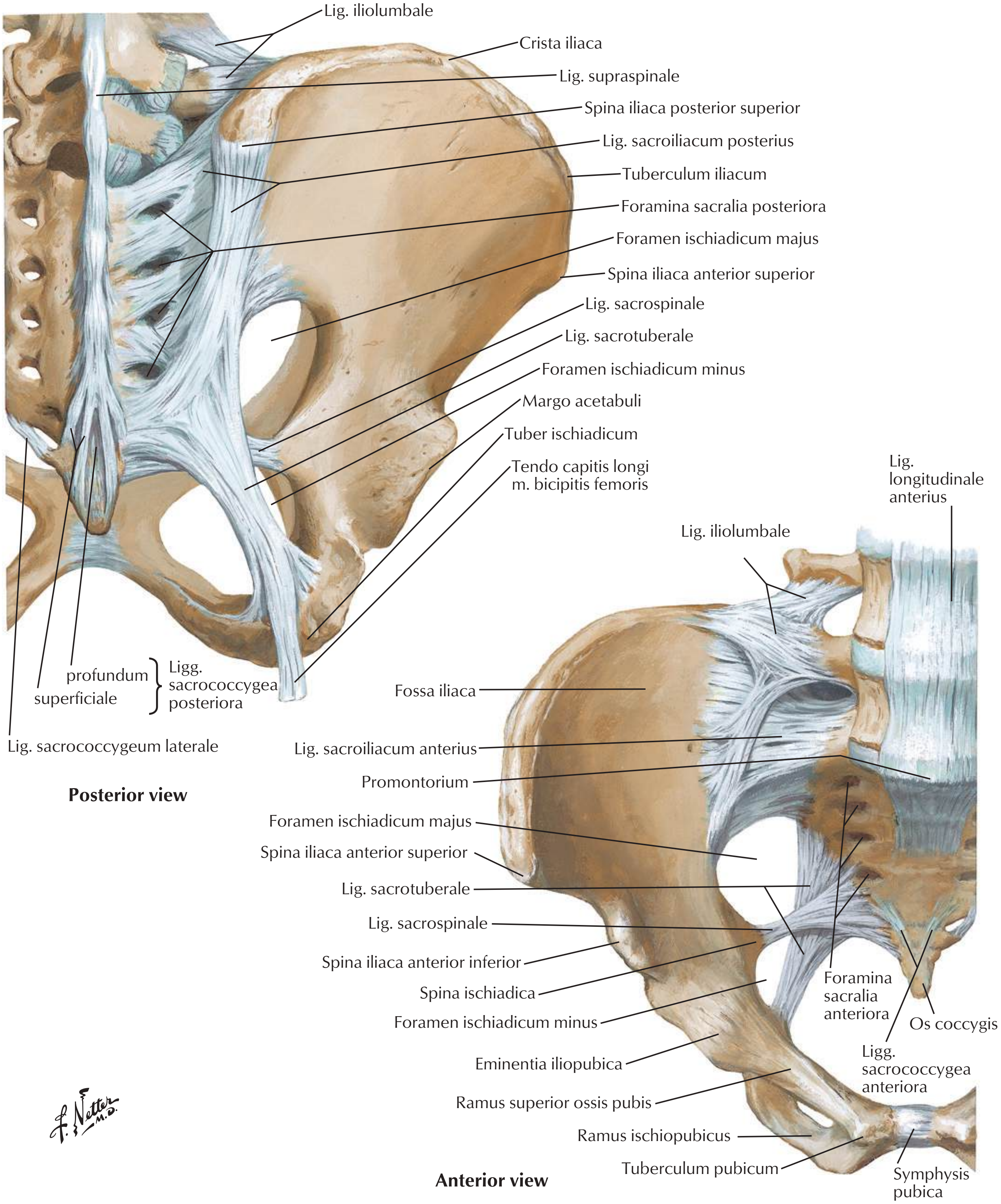

Diameter transversus of pelvic outlet (~11 cm)
Symphysis pubica
Tuber ischiadicum
Spina ischiadica
Conjugata recta of Apertura inferior pelvis (pelvic outlet; varies 9.5–11.5 cm because of mobility of Os coccygis)
Apex ossis coccygis

Female pelvis/female pelvic outlet: inferior view


Promontorium
Conjugata vera is ~1.5 cm shorter than conjugata diagonalis
Plane of pelvic inlet
Conjugata vera (~11 cm)
Plane of pelvic outlet
Conjugata diagonalis
Symphysis pubica
Conjugata recta (9.5–11.5 cm)

Diameter transversus is the widest distance of pelvic inlet

Female: sagittal section

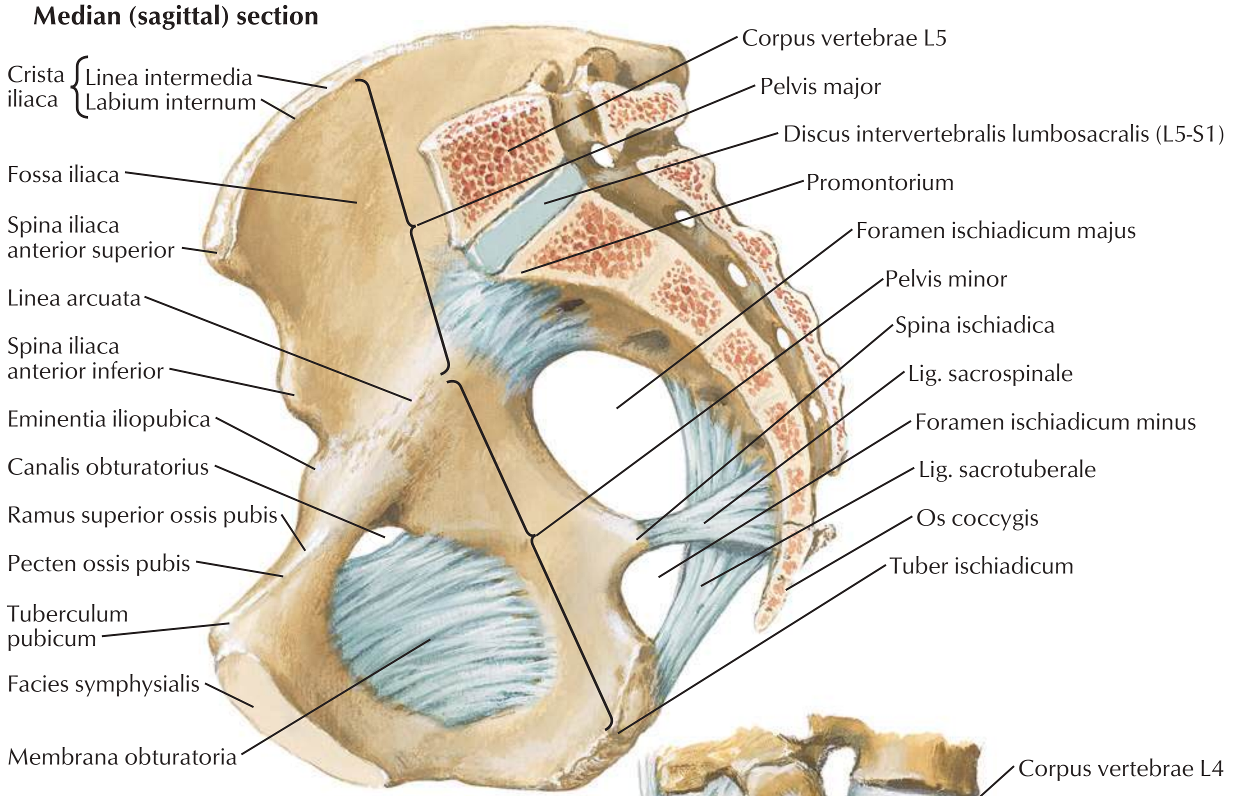

Lig. iliolumbale
Crista iliaca
Lig. supraspinale
Spina iliaca posterior superior
Lig. sacroiliacum posterius
Tuberculum iliacum
Foramina sacralia posteriora
Foramen ischiadicum majus
Spina iliaca anterior superior
Lig. sacrospinale
Lig. sacrotuberale
Foramen ischiadicum minus
Margo acetabuli
Tuber ischiadicum
Tendo capitis longi m. bicipitis femoris
profundum
superficiale
Ligg. sacrococcygea posteriora
Lig. sacrococcygeum laterale
Lig. longitudinale anterius
Lig. iliolumbale
Fossa iliaca
Lig. sacroiliacum anterius
Promontorium
Foramen ischiadicum majus
Spina iliaca anterior superior
Lig. sacrotuberale
Lig. sacrospinale
Spina iliaca anterior inferior
Spina ischiadica
Foramen ischiadicum minus
Eminentia iliopubica
Ramus superior ossis pubis
Ramus ischiopubicus
Tuberculum pubicum
Foramina sacralia anteriora
Os coccygis
Ligg. sacrococcygea anteriora
Symphysis pubica

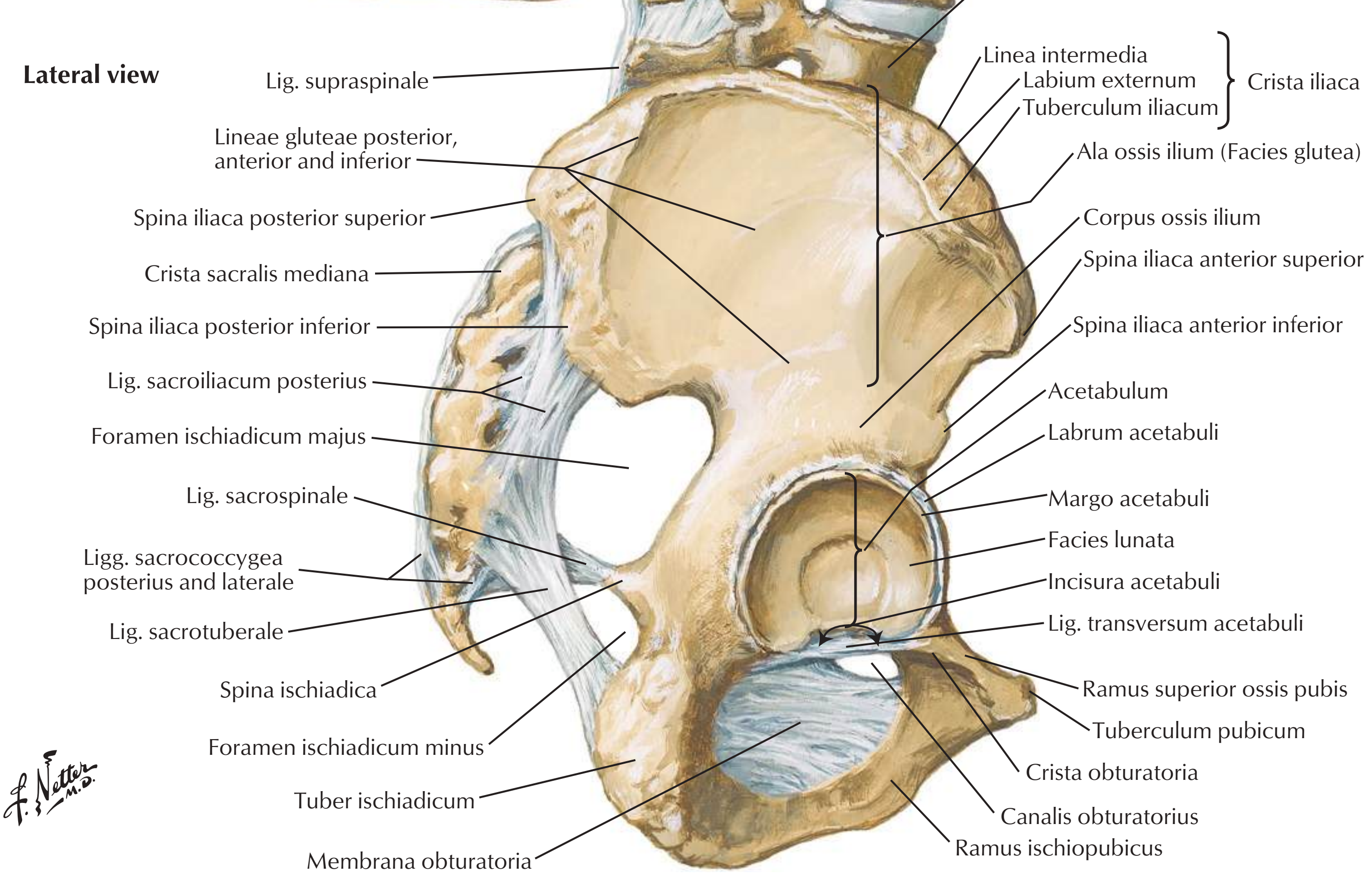
Posterior view

Anterior view

Bones and Ligaments of Pelvis (continued)

See also **Plate 167**

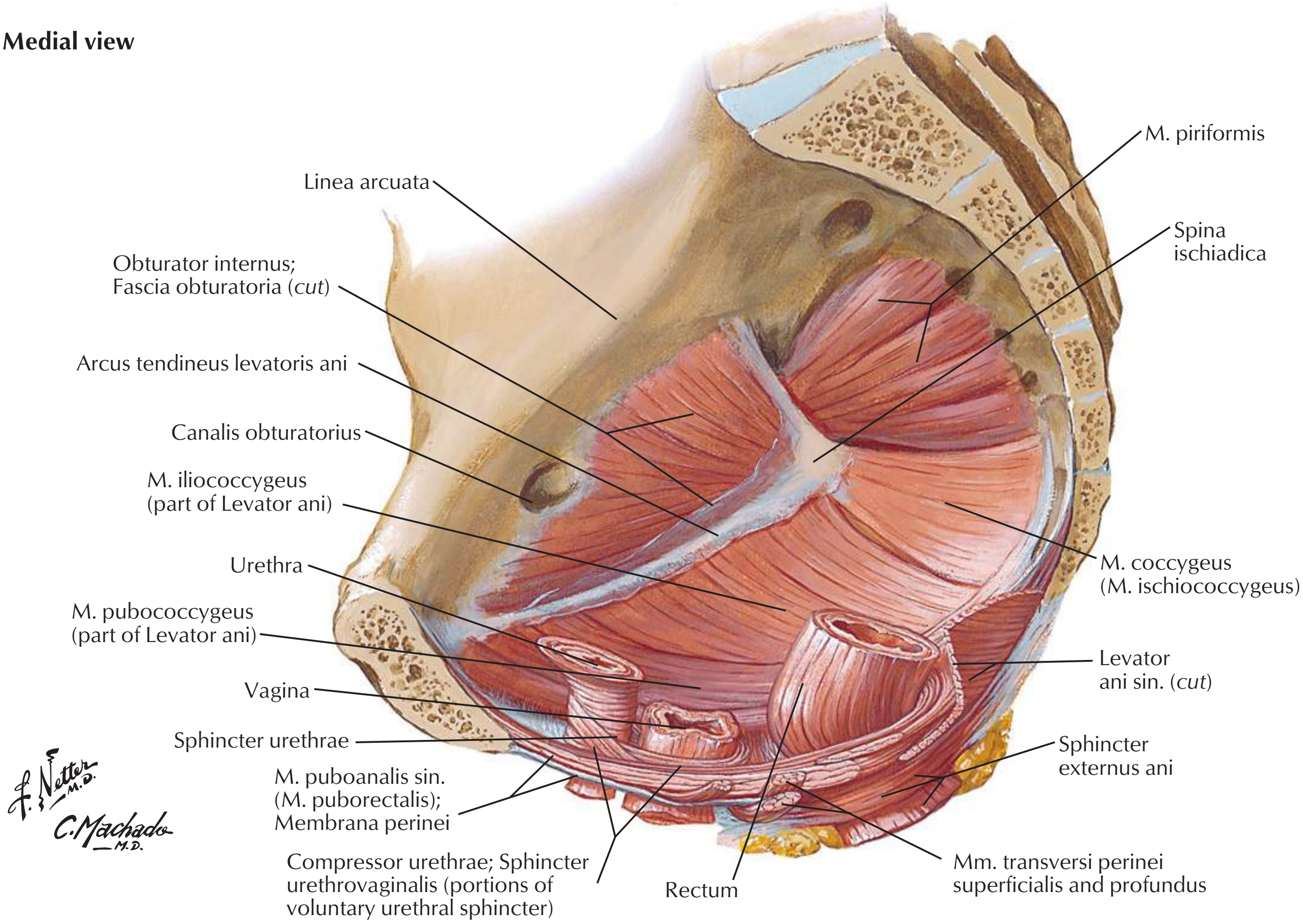

Median (sagittal) section
Crista iliaca
Linea intermedia
Labium internum
Fossa iliaca
Spina iliaca anterior superior
Linea arcuata
Spina iliaca anterior inferior
Eminentia iliopubica
Canalis obturatorius
Ramus superior ossis pubis
Pecten ossis pubis
Tuberculum pubicum
Facies symphysialis
Membrana obturatoria
Corpus vertebrae L5
Pelvis major
Discus intervertebralis lumbosacralis (L5-S1)
Promontorium
Foramen ischiadicum majus
Pelvis minor
Spina ischiadica
Lig. sacrospinale
Foramen ischiadicum minus
Lig. sacrotuberale
Os coccygis
Tuber ischiadicum


Lateral view
Lig. supraspinale
Lineae gluteae posterior, anterior and inferior
Spina iliaca posterior superior
Crista sacralis mediana
Spina iliaca posterior inferior
Lig. sacroiliacum posterius
Foramen ischiadicum majus
Lig. sacrospinale
Ligg. sacrococcygea posterius and laterale
Lig. sacrotuberale
Spina ischiadica
Foramen ischiadicum minus
Tuber ischiadicum
Membrana obturatoria
Corpus vertebrae L4
Linea intermedia
Labium externum
Tuberculum iliacum
Crista iliaca
Ala ossis ilium (Facies glutea)
Corpus ossis ilium
Spina iliaca anterior superior
Spina iliaca anterior inferior
Acetabulum
Labrum acetabuli
Margo acetabuli
Facies lunata
Incisura acetabuli
Lig. transversum acetabuli
Ramus superior ossis pubis
Tuberculum pubicum
Crista obturatoria
Canalis obturatorius
Ramus ischiopubicus

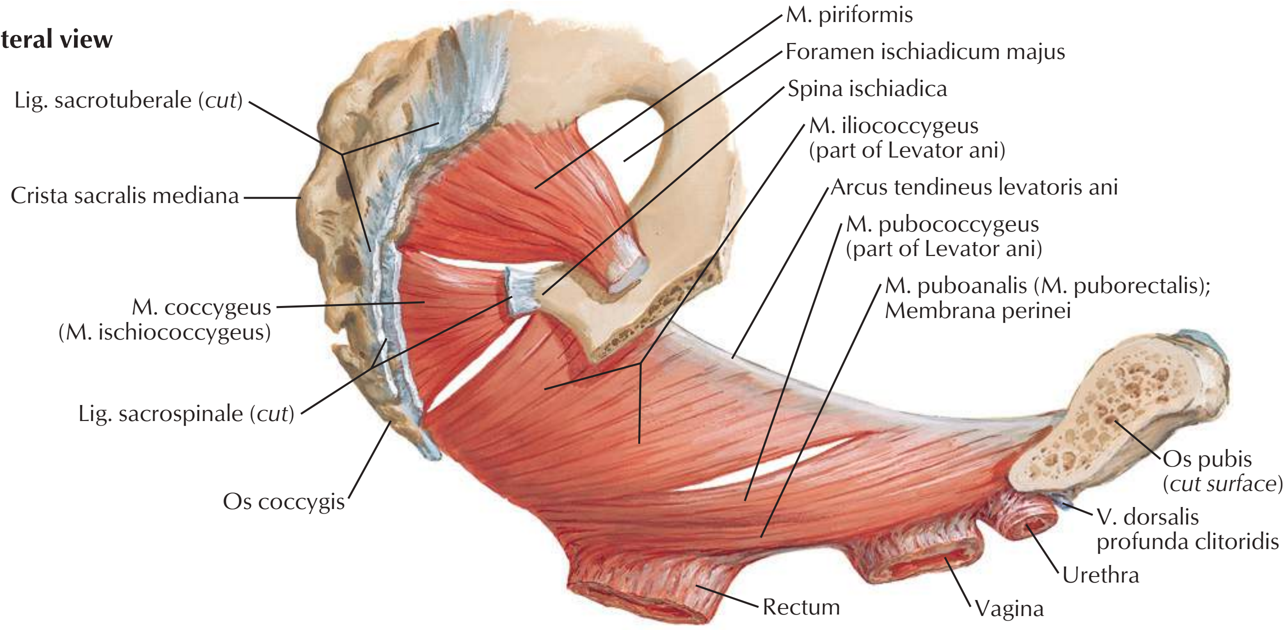
Pelvic Diaphragm: Female

See also Plate 373

Medial view

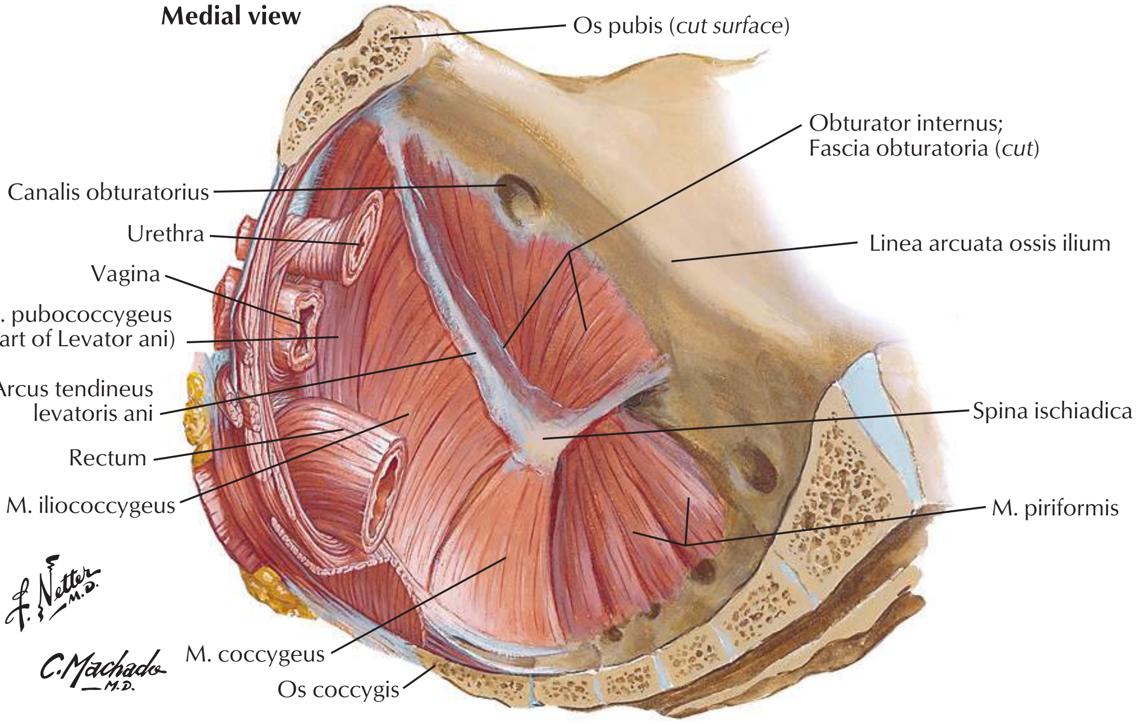

Linea arcuata
Obturator internus; Fascia obturatoria (*cut*)
Arcus tendineus levatoris ani
Canalis obturatorius
M. iliococcygeus (part of Levator ani)
Urethra
M. pubococcygeus (part of Levator ani)
Vagina
Sphincter urethrae
M. puboanalis sin. (M. puborectalis); Membrana perinei
Compressor urethrae; Sphincter urethrovaginalis (portions of voluntary urethral sphincter)
Rectum
Mm. transversi perinei superficialis and profundus
Sphincter externus ani
Levator ani sin. (*cut*)
M. coccygeus (M. ischiococcygeus)
Spina ischiadica
M. piriformis
F. Netter M.D.
C. Machado M.D.

Lateral view

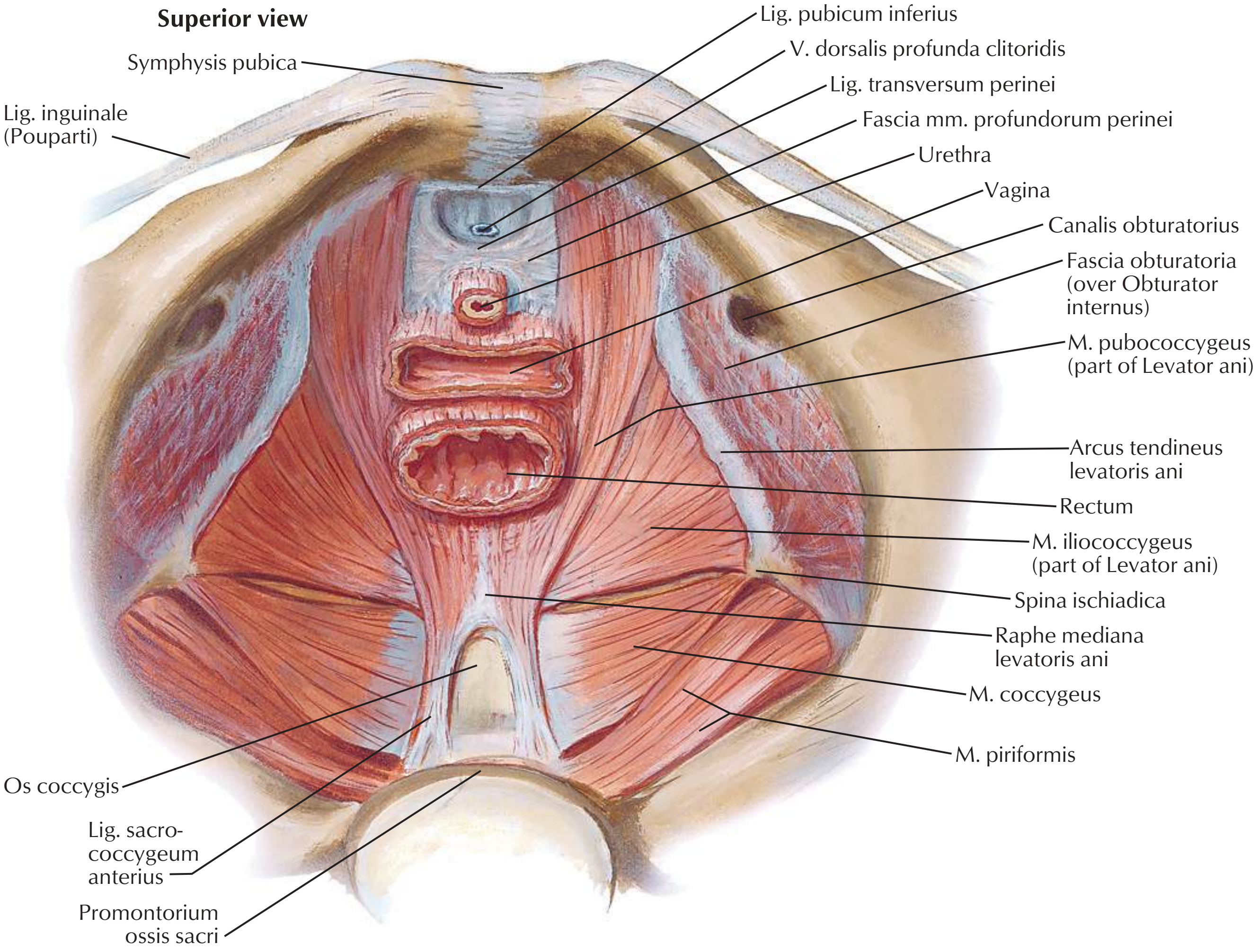

M. piriformis
Foramen ischiadicum majus
Spina ischiadica
M. iliococcygeus (part of Levator ani)
Arcus tendineus levatoris ani
M. pubococcygeus (part of Levator ani)
M. puboanalis (M. puborectalis); Membrana perinei
Lig. sacrotuberale (*cut*)
Crista sacralis mediana
M. coccygeus (M. ischiococcygeus)
Lig. sacrospinale (*cut*)
Os coccygis
Os pubis (*cut surface*)
V. dorsalis profunda clitoridis
Urethra
Rectum
Vagina

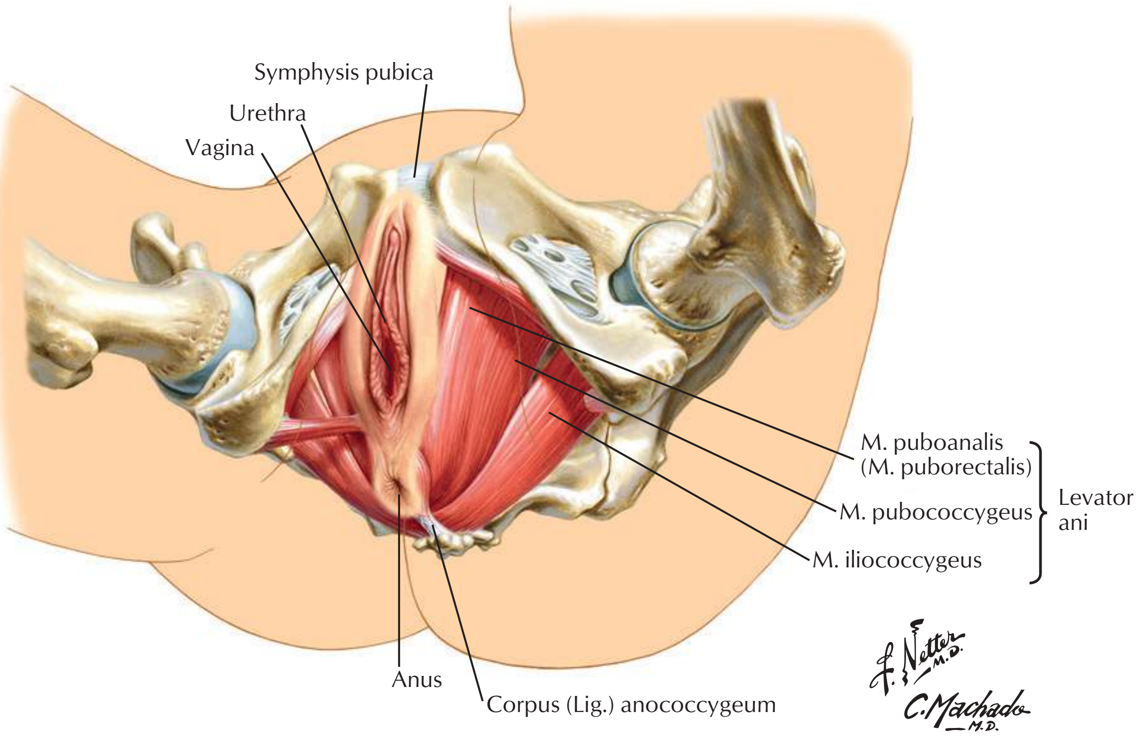
For urogenital diaphragm see **Plate 360**

Medial view

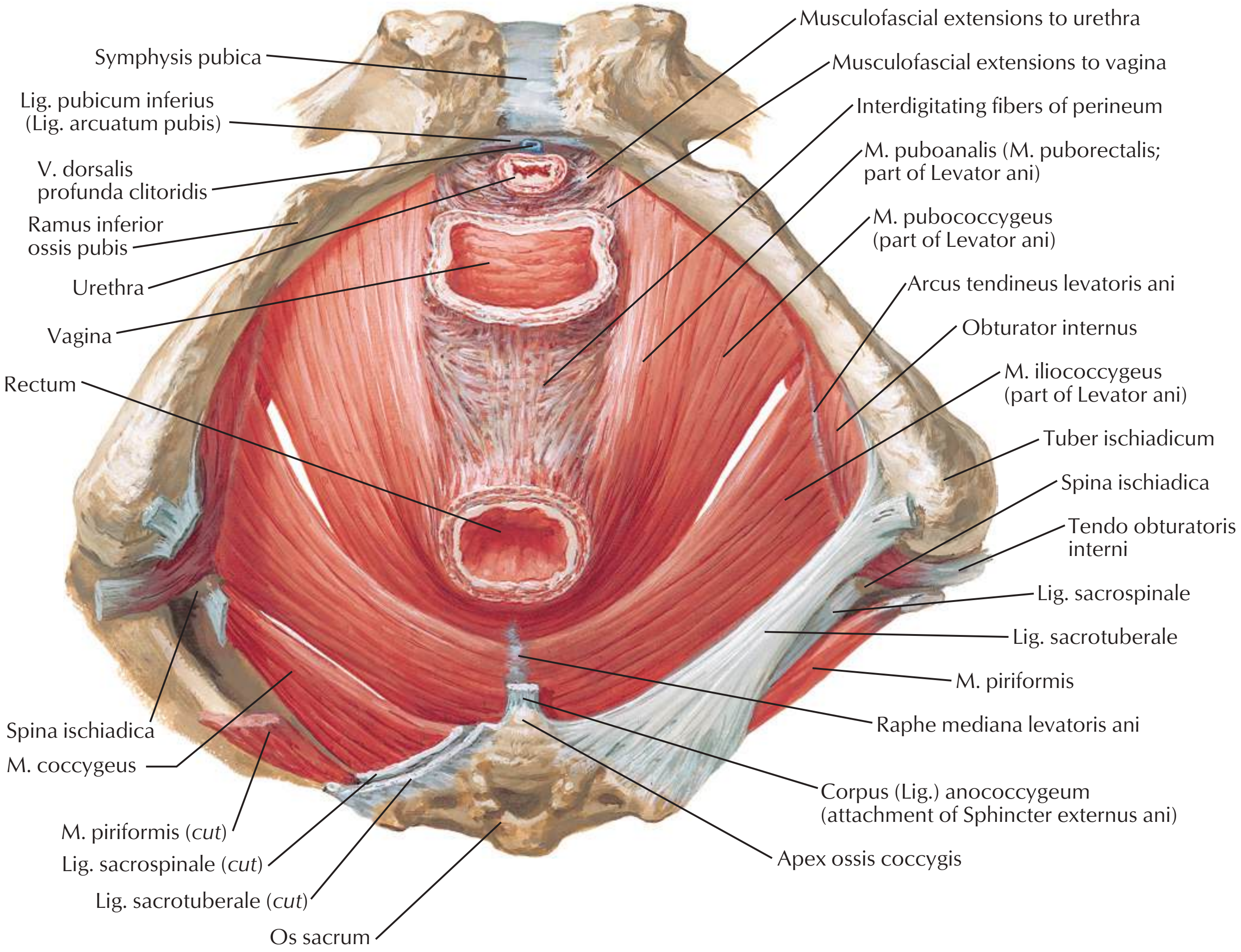

Os pubis (cut surface)
Obturator internus; Fascia obturatoria (cut)
Canalis obturatorius
Urethra
Linea arcuata ossis ilium
Vagina
M. pubococcygeus (part of Levator ani)
Arcus tendineus levatoris ani
Spina ischiadica
Rectum
M. iliococcygeus
M. piriformis
F. Netter M.D.
C. Machado M.D.
M. coccygeus
Os coccygis

Superior view


Lig. pubicum inferius
V. dorsalis profunda clitoridis
Symphysis pubica
Lig. transversum perinei
Lig. inguinale (Pouparti)
Fascia mm. profundorum perinei
Urethra
Vagina
Canalis obturatorius
Fascia obturatoria (over Obturator internus)
M. pubococcygeus (part of Levator ani)
Arcus tendineus levatoris ani
Rectum
M. iliococcygeus (part of Levator ani)
Spina ischiadica
Raphe mediana levatoris ani
M. coccygeus
M. piriformis
Os coccygis
Lig. sacro-coccygeum anterius
Promontorium ossis sacri

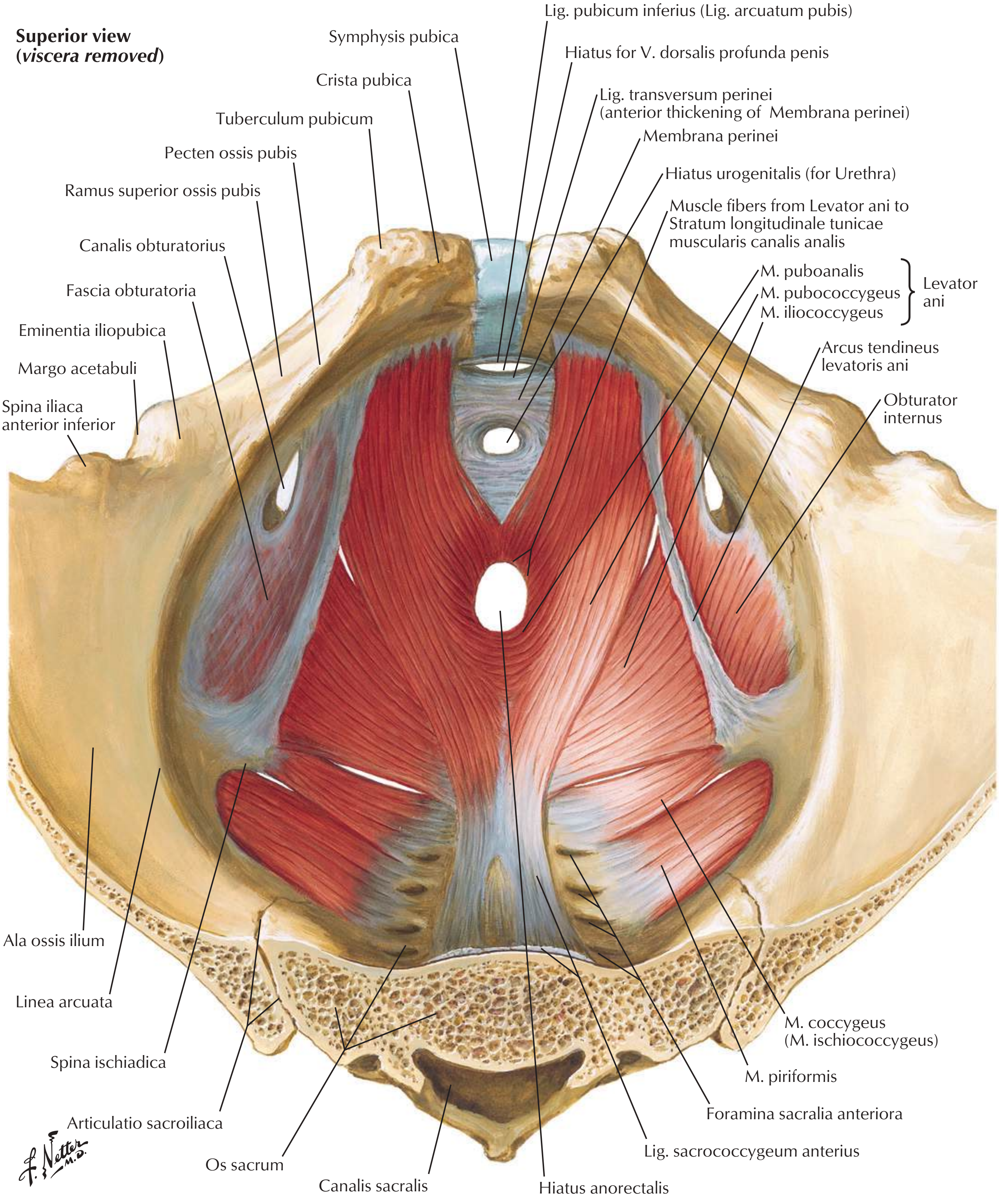

Symphysis pubica
Urethra
Vagina
M. puboanalis
(M. puborectalis)
M. pubococcygeus
M. iliococcygeus
Levator ani
Anus
Corpus (Lig.) anococcygeum
F. Netter M.D.
C. Machado M.D.

Inferior view


Symphysis pubica
Lig. pubicum inferius
(Lig. arcuatum pubis)
V. dorsalis
profunda clitoridis
Ramus inferior
ossis pubis
Urethra
Vagina
Rectum
Spina ischiadica
M. coccygeus
M. piriformis (cut)
Lig. sacrospinale (cut)
Lig. sacrotuberale (cut)
Os sacrum
Musculofascial extensions to urethra
Musculofascial extensions to vagina
Interdigitating fibers of perineum
M. puboanalis (M. puborectalis;
part of Levator ani)
M. pubococcygeus
(part of Levator ani)
Arcus tendineus levatoris ani
Obturator internus
M. iliococcygeus
(part of Levator ani)
Tuber ischiadicum
Spina ischiadica
Tendo obturatoris
interni
Lig. sacrospinale
Lig. sacrotuberale
M. piriformis
Raphe mediana levatoris ani
Corpus (Lig.) anococcygeum
(attachment of Sphincter externus ani)
Apex ossis coccygis

Pelvic Diaphragm: Male

See also **Plate 343**

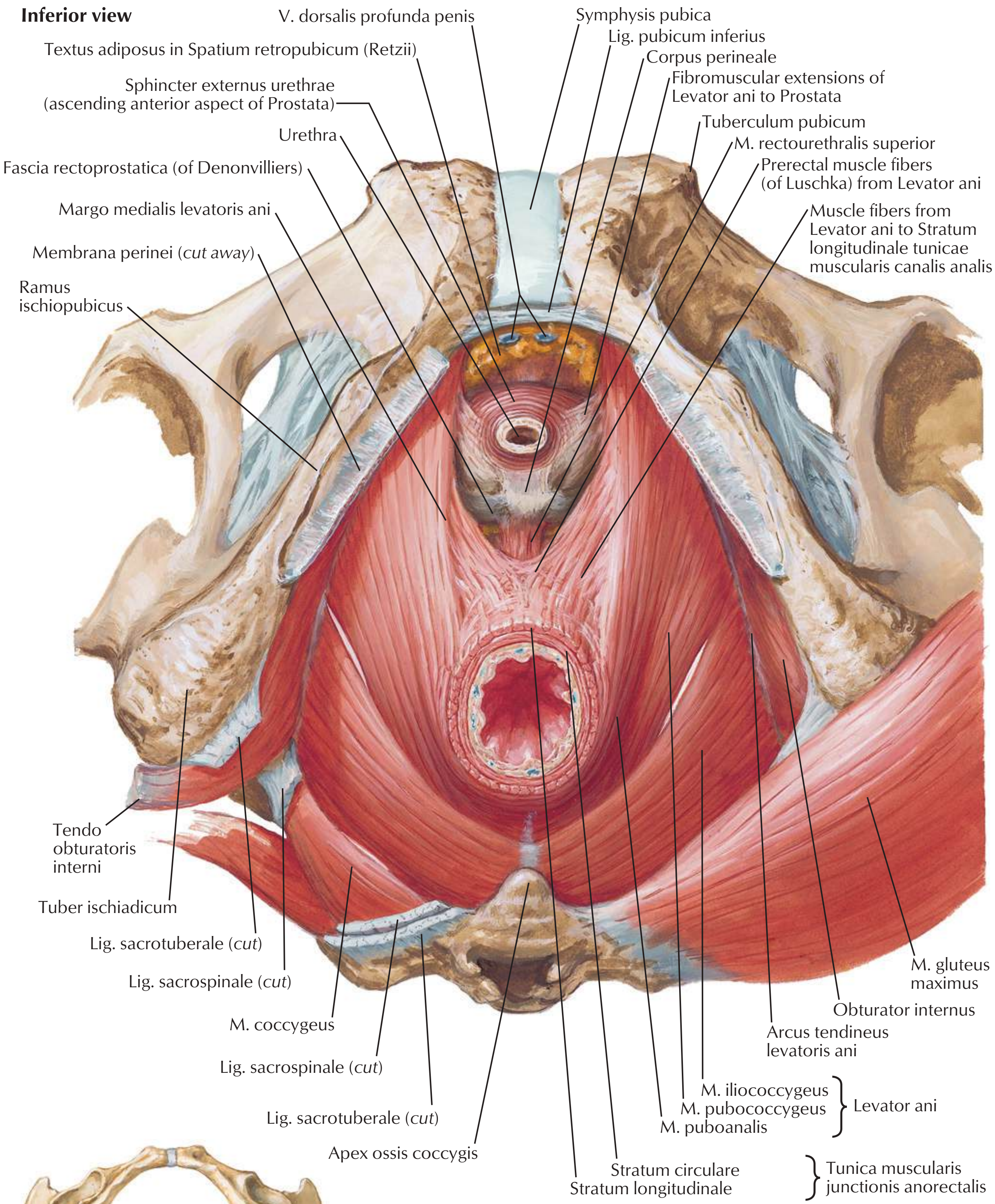


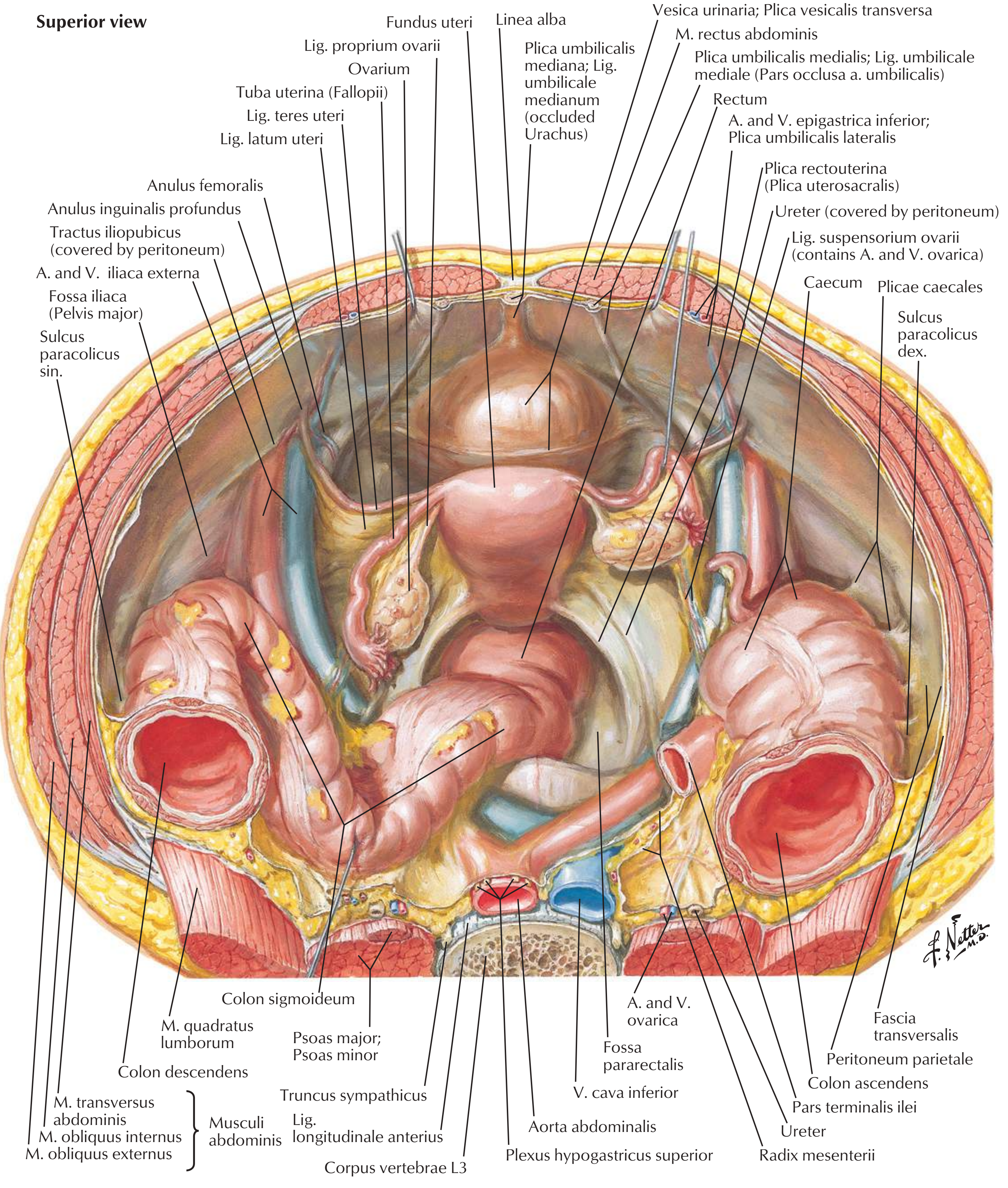
Superior view
(*viscera removed*)
Lig. pubicum inferius (Lig. arcuatum pubis)
Symphysis pubica
Hiatus for V. dorsalis profunda penis
Crista pubica
Lig. transversum perinei (anterior thickening of Membrana perinei)
Tuberculum pubicum
Membrana perinei
Pecten ossis pubis
Hiatus urogenitalis (for Urethra)
Ramus superior ossis pubis
Muscle fibers from Levator ani to Stratum longitudinale tunicae muscularis canalis analis
Canalis obturatorius
M. puboanalis
M. pubococcygeus
M. iliococcygeus
Levator ani
Fascia obturatoria
Eminentia iliopubica
Arcus tendineus levatoris ani
Margo acetabuli
Obturator internus
Spina iliaca anterior inferior
Ala ossis ilium
Linea arcuata
M. coccygeus (M. ischiococcygeus)
Spina ischiadica
M. piriformis
Foramina sacralia anteriora
Articulatio sacroiliaca
Lig. sacrococcygeum anterius
Os sacrum
Canalis sacralis
Hiatus anorectalis

Pelvic Diaphragm: Male (continued)

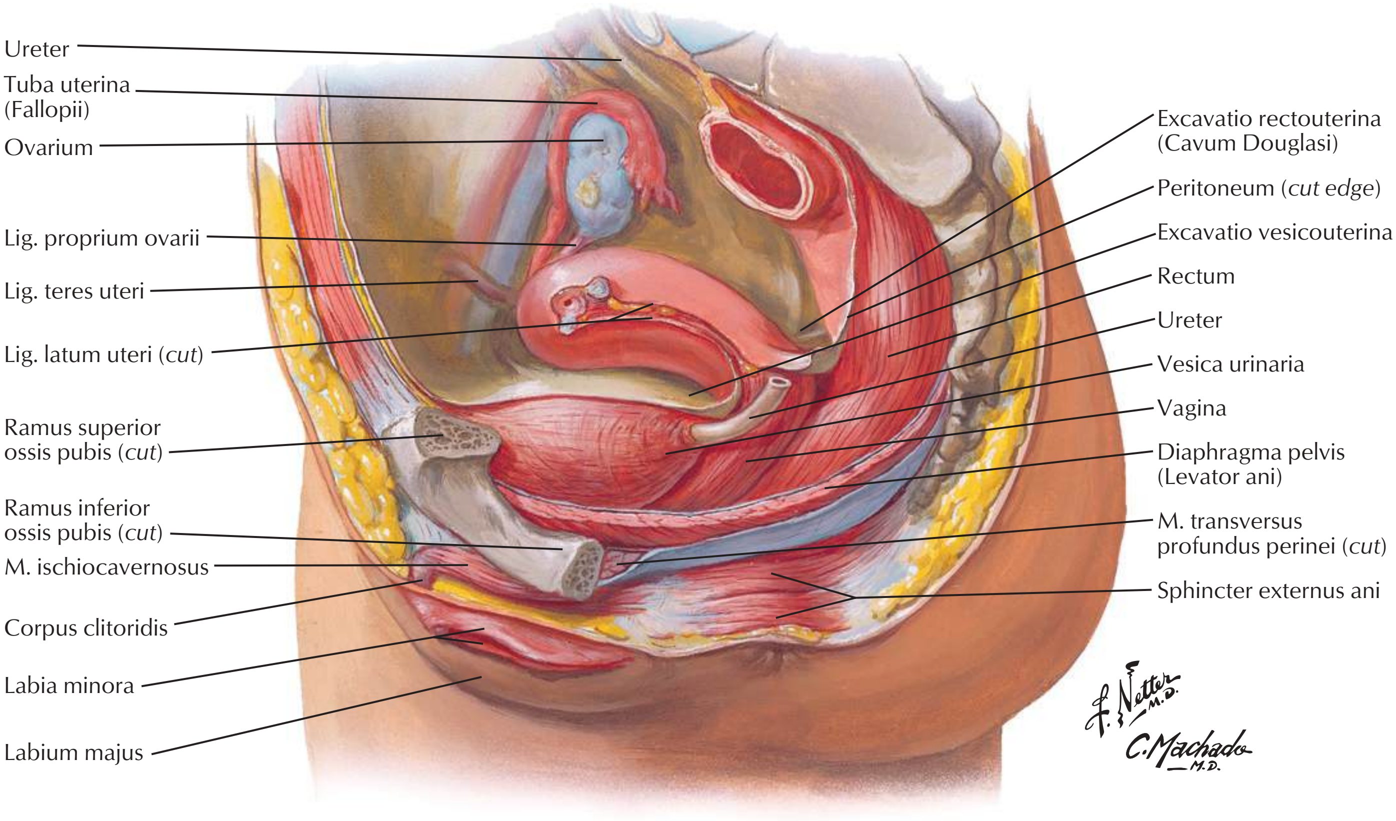
For urogenital diaphragm see Plate 365

Inferior view

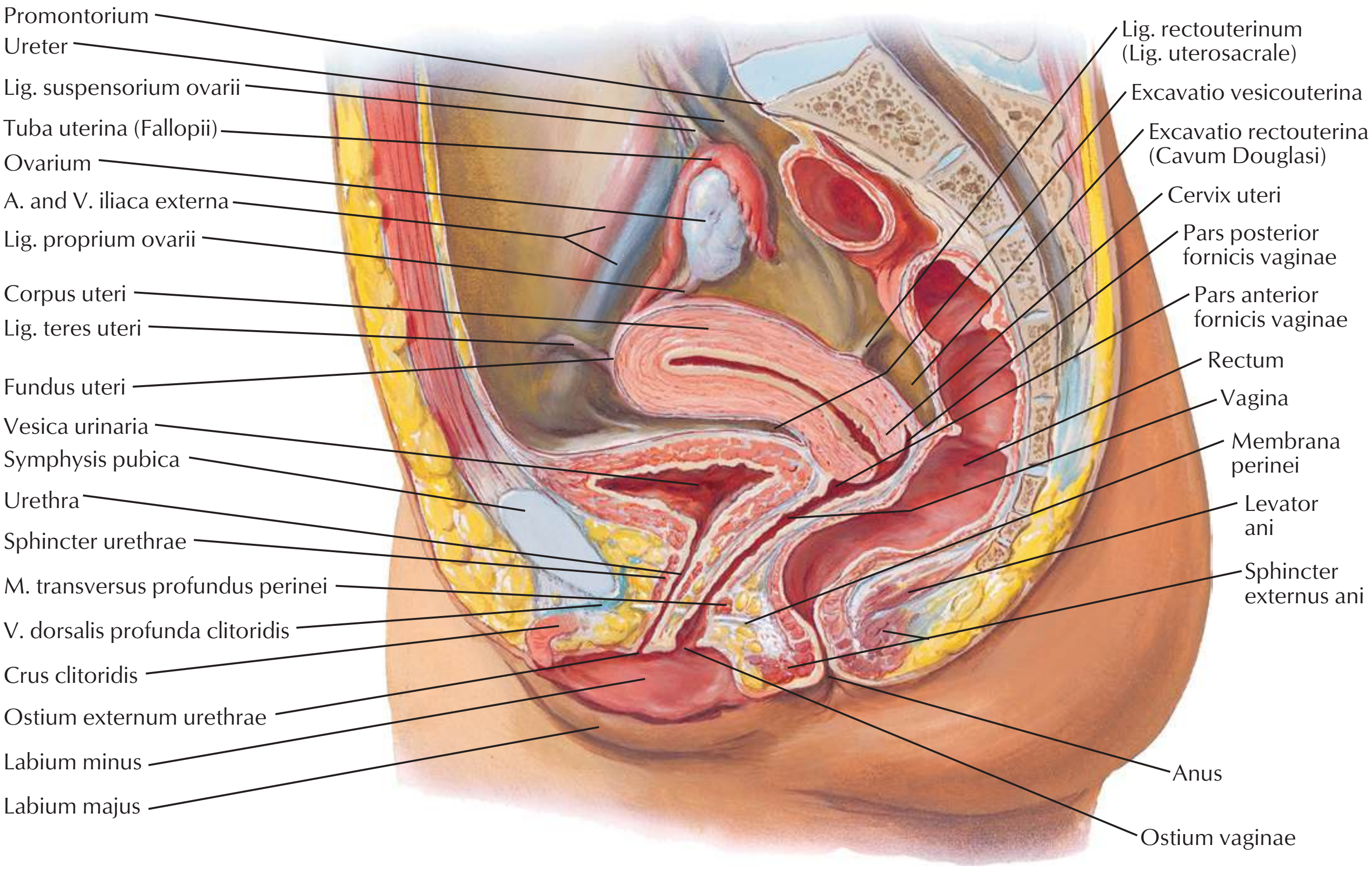

V. dorsalis profunda penis
Textus adiposus in Spatium retropubicum (Retzii)
Sphincter externus urethrae (ascending anterior aspect of Prostata)
Urethra
Fascia rectoprostatica (of Denonvilliers)
Margo medialis levatoris ani
Membrana perinei (*cut away*)
Ramus ischiopubicus
Symphysis pubica
Lig. pubicum inferius
Corpus perineale
Fibromuscular extensions of Levator ani to Prostata
Tuberculum pubicum
M. rectourethralis superior
Prerectal muscle fibers (of Luschka) from Levator ani
Muscle fibers from Levator ani to Stratum longitudinale tunicae muscularis canalis analis
Tendo obturatoris interni
Tuber ischiadicum
Lig. sacrotuberale (*cut*)
Lig. sacrospinale (*cut*)
M. coccygeus
Lig. sacrospinale (*cut*)
Lig. sacrotuberale (*cut*)
Apex ossis coccygis
M. gluteus maximus
Obturator internus
Arcus tendineus levatoris ani
M. iliococcygeus
M. pubococcygeus
M. puboanalis
Levator ani
Stratum circulare
Stratum longitudinale
Tunica muscularis junctionis anorectalis
F. Netter M.D.
C. Machado M.D.


Superior view
Fundus uteri
Lig. proprium ovarii
Ovarium
Tuba uterina (Fallopii)
Lig. teres uteri
Lig. latum uteri
Linea alba
Plica umbilicalis mediana; Lig. umbilicale medianum (occluded Urachus)
Vesica urinaria; Plica vesicalis transversa
M. rectus abdominis
Plica umbilicalis medialis; Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Rectum
A. and V. epigastrica inferior; Plica umbilicalis lateralis
Plica rectouterina (Plica uterosacralis)
Ureter (covered by peritoneum)
Lig. suspensorium ovarii (contains A. and V. ovarica)
Caecum
Plicae caecales
Sulcus paracolicus dex.
Anulus femoralis
Anulus inguinalis profundus
Tractus iliopubicus (covered by peritoneum)
A. and V. iliaca externa
Fossa iliaca (Pelvis major)
Sulcus paracolicus sin.
Colon sigmoideum
M. quadratus lumborum
Psoas major; Psoas minor
Colon descendens
Truncus sympathicus
M. transversus abdominis
M. obliquus internus
M. obliquus externus
Musculi abdominis
Lig. longitudinale anterius
Corpus vertebrae L3
A. and V. ovarica
Fossa pararectalis
V. cava inferior
Aorta abdominalis
Plexus hypogastricus superior
Fascia transversalis
Peritoneum parietale
Colon ascendens
Pars terminalis ilei
Ureter
Radix mesenterii
F. Netter M.D.

Paramedian (sagittal) dissection

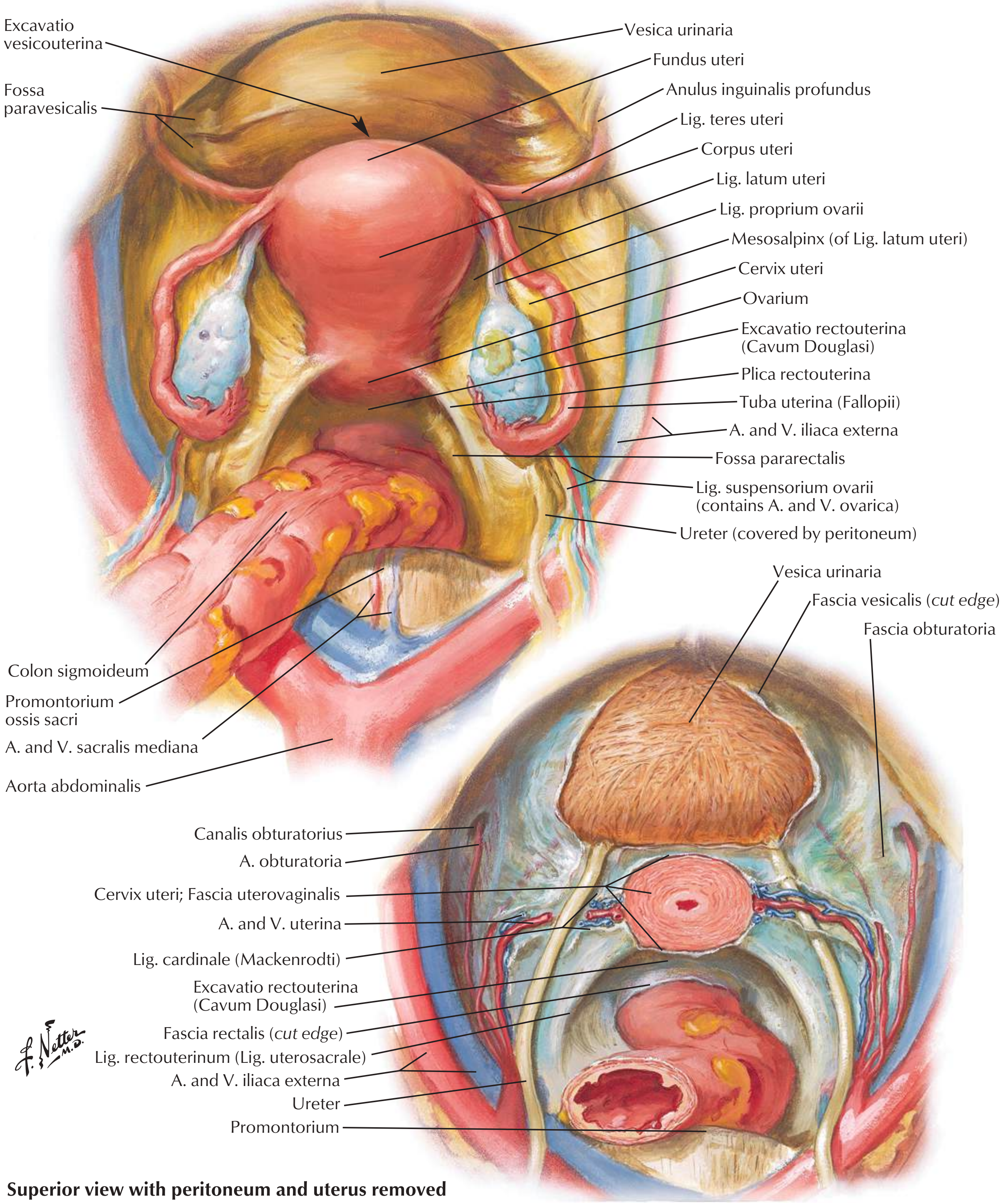

Ureter
Tuba uterina (Fallopii)
Ovarium
Lig. proprium ovarii
Lig. teres uteri
Lig. latum uteri (*cut*)
Ramus superior ossis pubis (*cut*)
Ramus inferior ossis pubis (*cut*)
M. ischiocavernosus
Corpus clitoridis
Labia minora
Labium majus
Excavatio rectouterina (Cavum Douglasi)
Peritoneum (*cut edge*)
Excavatio vesicouterina
Rectum
Ureter
Vesica urinaria
Vagina
Diaphragma pelvis (Levator ani)
M. transversus profundus perinei (*cut*)
Sphincter externus ani
F. Netter M.D.
C. Machado M.D.

Median (sagittal) section


Promontorium
Ureter
Lig. suspensorium ovarii
Tuba uterina (Fallopii)
Ovarium
A. and V. iliaca externa
Lig. proprium ovarii
Corpus uteri
Lig. teres uteri
Fundus uteri
Vesica urinaria
Symphysis pubica
Urethra
Sphincter urethrae
M. transversus profundus perinei
V. dorsalis profunda clitoridis
Crus clitoridis
Ostium externum urethrae
Labium minus
Labium majus
Lig. rectouterinum (Lig. uterosacrale)
Excavatio vesicouterina
Excavatio rectouterina (Cavum Douglasi)
Cervix uteri
Pars posterior fornicis vaginae
Pars anterior fornicis vaginae
Rectum
Vagina
Membrana perinei
Levator ani
Sphincter externus ani
Anus
Ostium vaginae

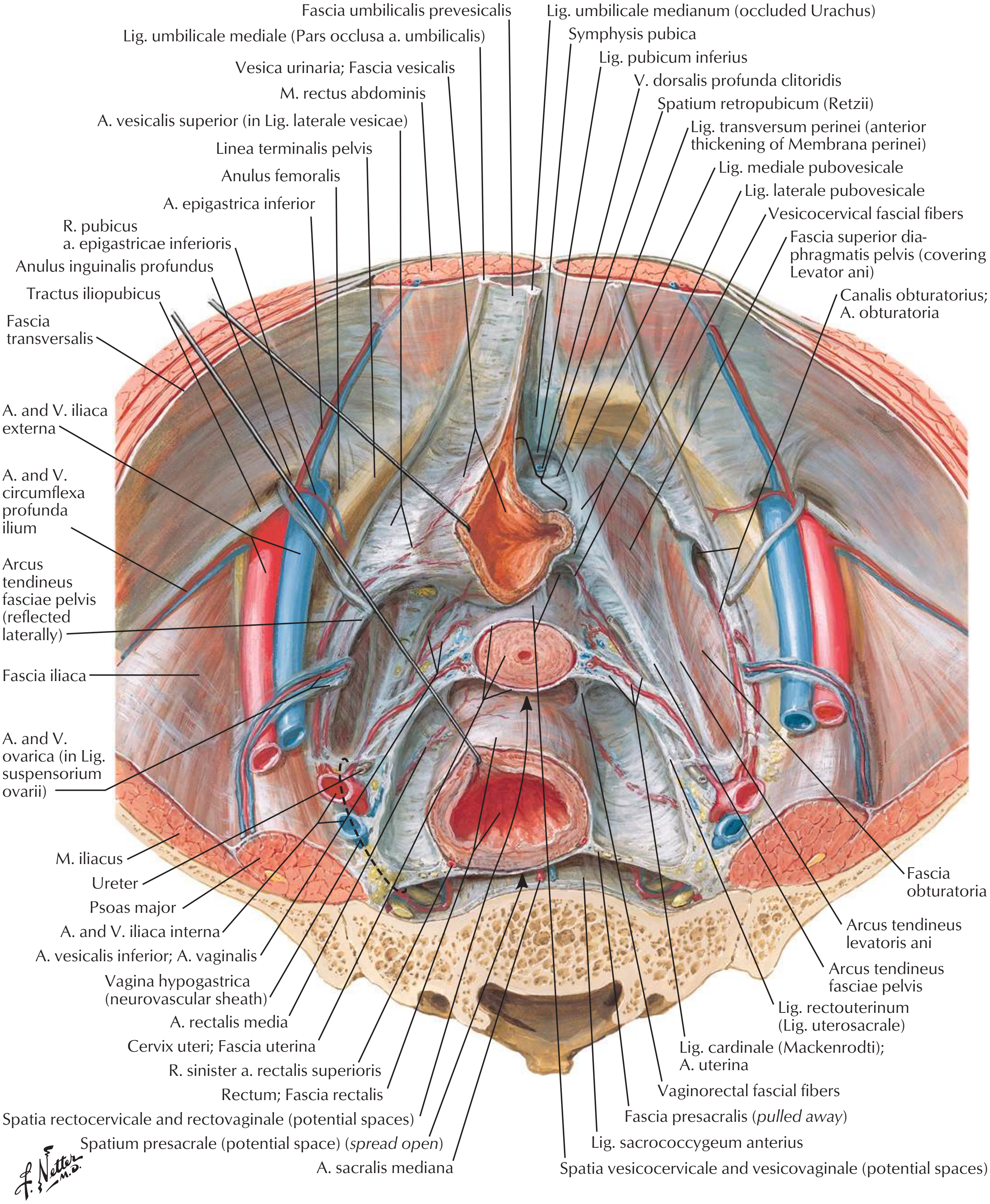
Pelvic Viscera: Female

Superior view with peritoneum intact

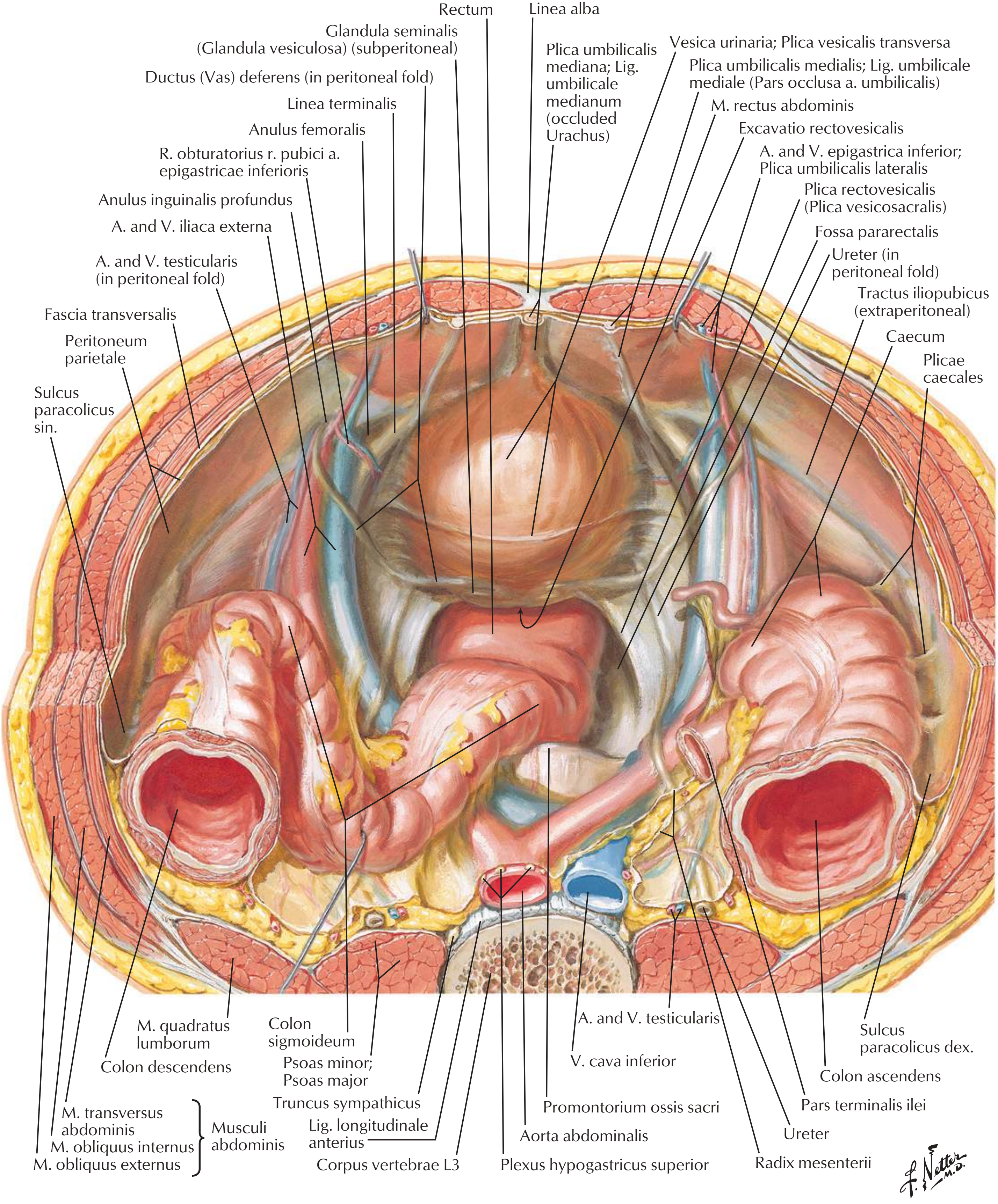

Excavatio vesicouterina
Fossa paravesicalis
Vesica urinaria
Fundus uteri
Anulus inguinalis profundus
Lig. teres uteri
Corpus uteri
Lig. latum uteri
Lig. proprium ovarii
Mesosalpinx (of Lig. latum uteri)
Cervix uteri
Ovarium
Excavatio rectouterina (Cavum Douglasi)
Plica rectouterina
Tuba uterina (Fallopii)
A. and V. iliaca externa
Fossa pararectalis
Lig. suspensorium ovarii (contains A. and V. ovarica)
Ureter (covered by peritoneum)
Colon sigmoideum
Promontorium ossis sacri
A. and V. sacralis mediana
Aorta abdominalis
Vesica urinaria
Fascia vesicalis (*cut edge*)
Fascia obturatoria
Canalis obturatorius
A. obturatoria
Cervix uteri; Fascia uterovaginalis
A. and V. uterina
Lig. cardinale (Mackenrodti)
Excavatio rectouterina (Cavum Douglasi)
Fascia rectalis (*cut edge*)
Lig. rectouterinum (Lig. uterosacrale)
A. and V. iliaca externa
Ureter
Promontorium

Superior view with peritoneum and uterus removed

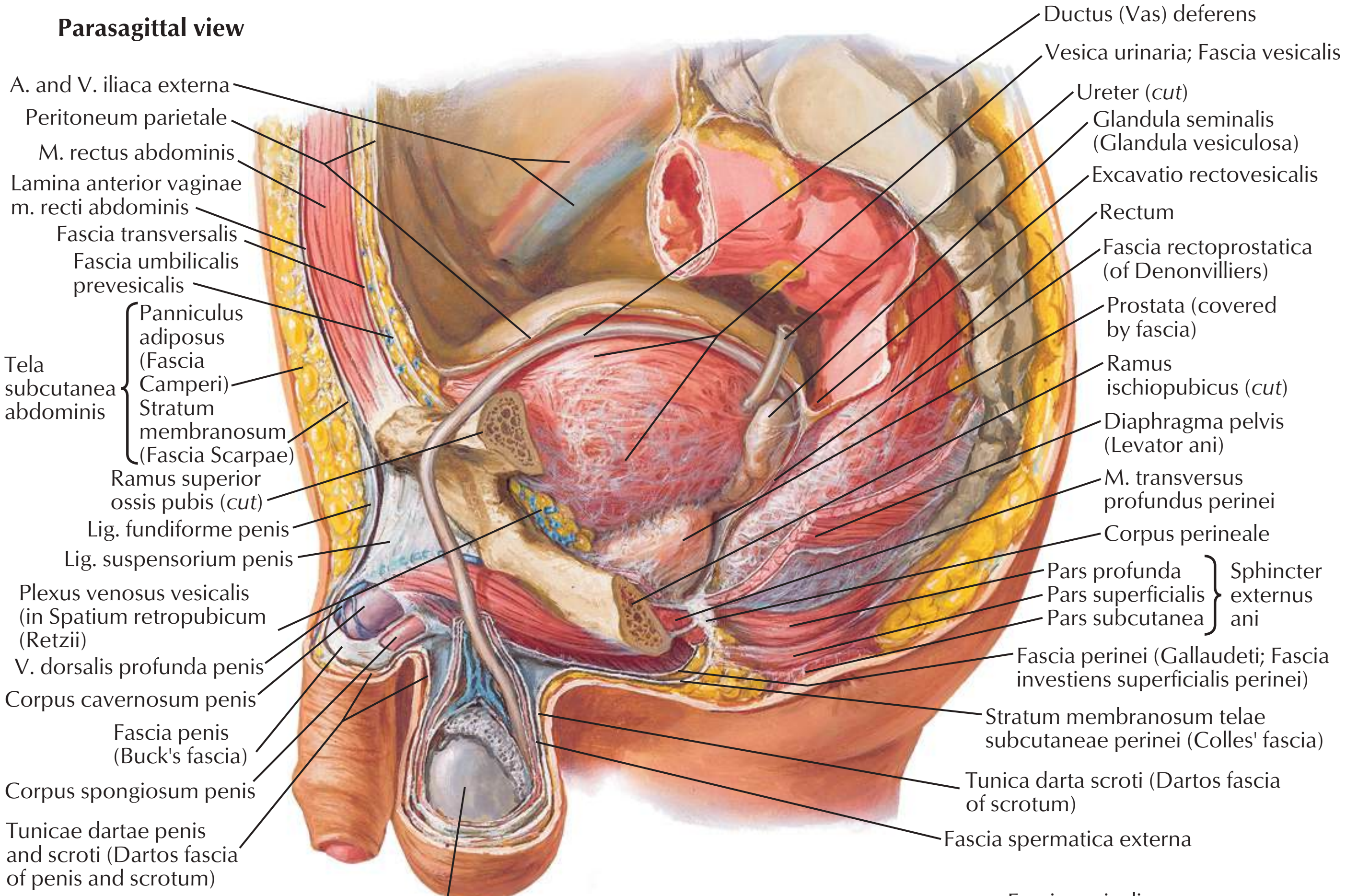
Female: superior view (peritoneum and loose areolar tissue removed)


Fascia umbilicalis prevesicalis
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Vesica urinaria; Fascia vesicalis
M. rectus abdominis
A. vesicalis superior (in Lig. laterale vesicae)
Linea terminalis pelvis
Anulus femoralis
A. epigastrica inferior
R. pubicus a. epigastricae inferioris
Anulus inguinalis profundus
Tractus iliopubicus
Fascia transversalis
A. and V. iliaca externa
A. and V. circumflexa profunda ilium
Arcus tendineus fasciae pelvis (reflected laterally)
Fascia iliaca
A. and V. ovarica (in Lig. suspensorium ovarii)
M. iliacus
Ureter
Psoas major
A. and V. iliaca interna
A. vesicalis inferior; A. vaginalis
Vagina hypogastrica (neurovascular sheath)
A. rectalis media
Cervix uteri; Fascia uterina
R. sinister a. rectalis superioris
Rectum; Fascia rectalis
Spatia rectocervicale and rectovaginale (potential spaces)
Spatium presacrale (potential space) (*spread open*)
A. sacralis mediana
Lig. umbilicale medianum (occluded Urachus)
Symphysis pubica
Lig. pubicum inferius
V. dorsalis profunda clitoridis
Spatium retropubicum (Retzii)
Lig. transversum perinei (anterior thickening of Membrana perinei)
Lig. mediale pubovesicale
Lig. laterale pubovesicale
Vesicocervical fascial fibers
Fascia superior diaphragmatis pelvis (covering Levator ani)
Canalis obturatorius; A. obturatoria
Fascia obturatoria
Arcus tendineus levatoris ani
Arcus tendineus fasciae pelvis
Lig. rectouterinum (Lig. uterosacrale)
Lig. cardinale (Mackenrodti); A. uterina
Vaginorectal fascial fibers
Fascia presacralis (*pulled away*)
Lig. sacrococcygeum anterius
Spatia vesicocervicale and vesicovaginale (potential spaces)
F. Netter M.D.

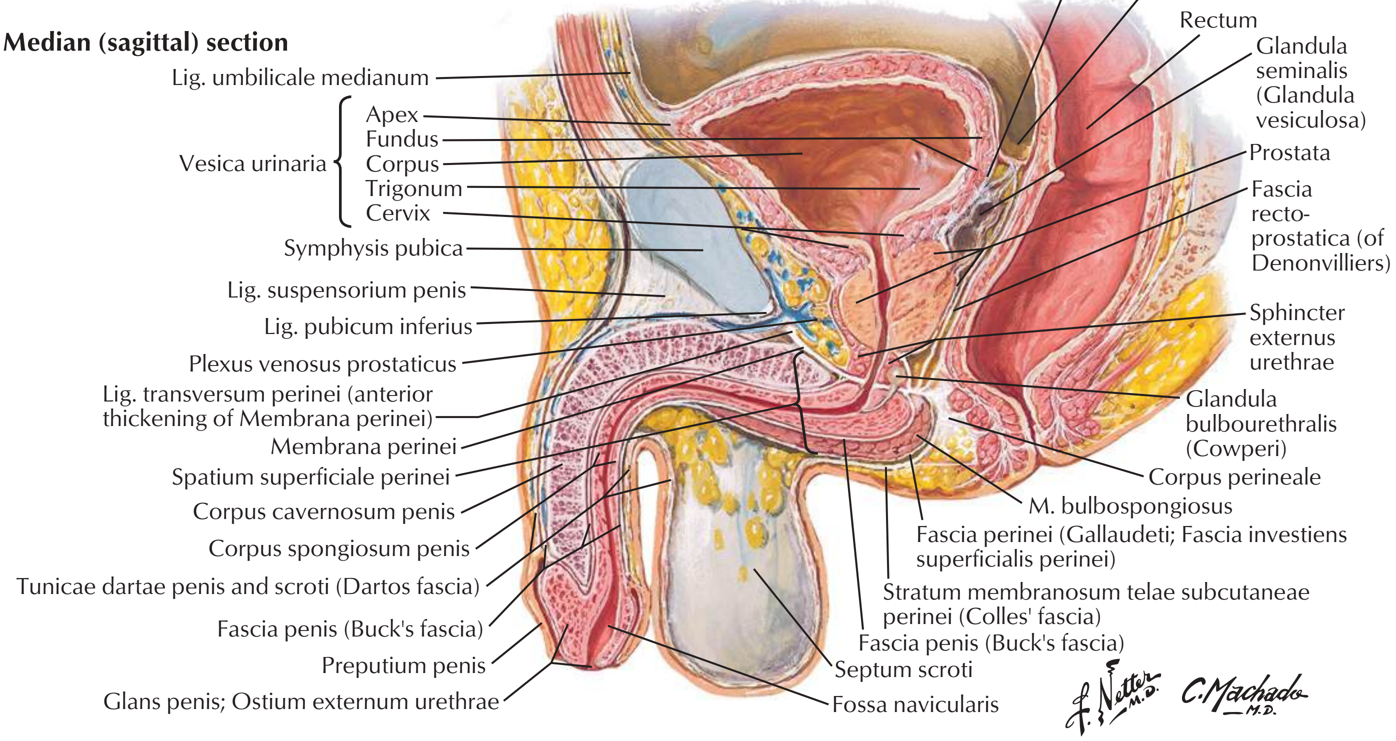
Superior view


Rectum
Linea alba
Glandula seminalis (Glandula vesiculosa) (subperitoneal)
Plica umbilicalis mediana; Lig. umbilicale medianum (occluded Urachus)
Vesica urinaria; Plica vesicalis transversa
Ductus (Vas) deferens (in peritoneal fold)
Plica umbilicalis medialis; Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Linea terminalis
M. rectus abdominis
Anulus femoralis
Excavatio rectovesicalis
R. obturatorius r. pubici a. epigastricae inferioris
A. and V. epigastrica inferior; Plica umbilicalis lateralis
Anulus inguinalis profundus
Plica rectovesicalis (Plica vesicosacralis)
A. and V. iliaca externa
Fossa pararectalis
A. and V. testicularis (in peritoneal fold)
Ureter (in peritoneal fold)
Tractus iliopubicus (extraperitoneal)
Fascia transversalis
Caecum
Peritoneum parietale
Plicae caecales
Sulcus paracolicus sin.
M. quadratus lumborum
Colon sigmoideum
A. and V. testicularis
Sulcus paracolicus dex.
Colon descendens
Psoas minor; Psoas major
V. cava inferior
Colon ascendens
Truncus sympathicus
Promontorium ossis sacri
Pars terminalis ilei
M. transversus abdominis
M. obliquus internus
M. obliquus externus
Musculi abdominis
Lig. longitudinale anterius
Aorta abdominalis
Ureter
Corpus vertebrae L3
Plexus hypogastricus superior
Radix mesenterii

Parasagittal view

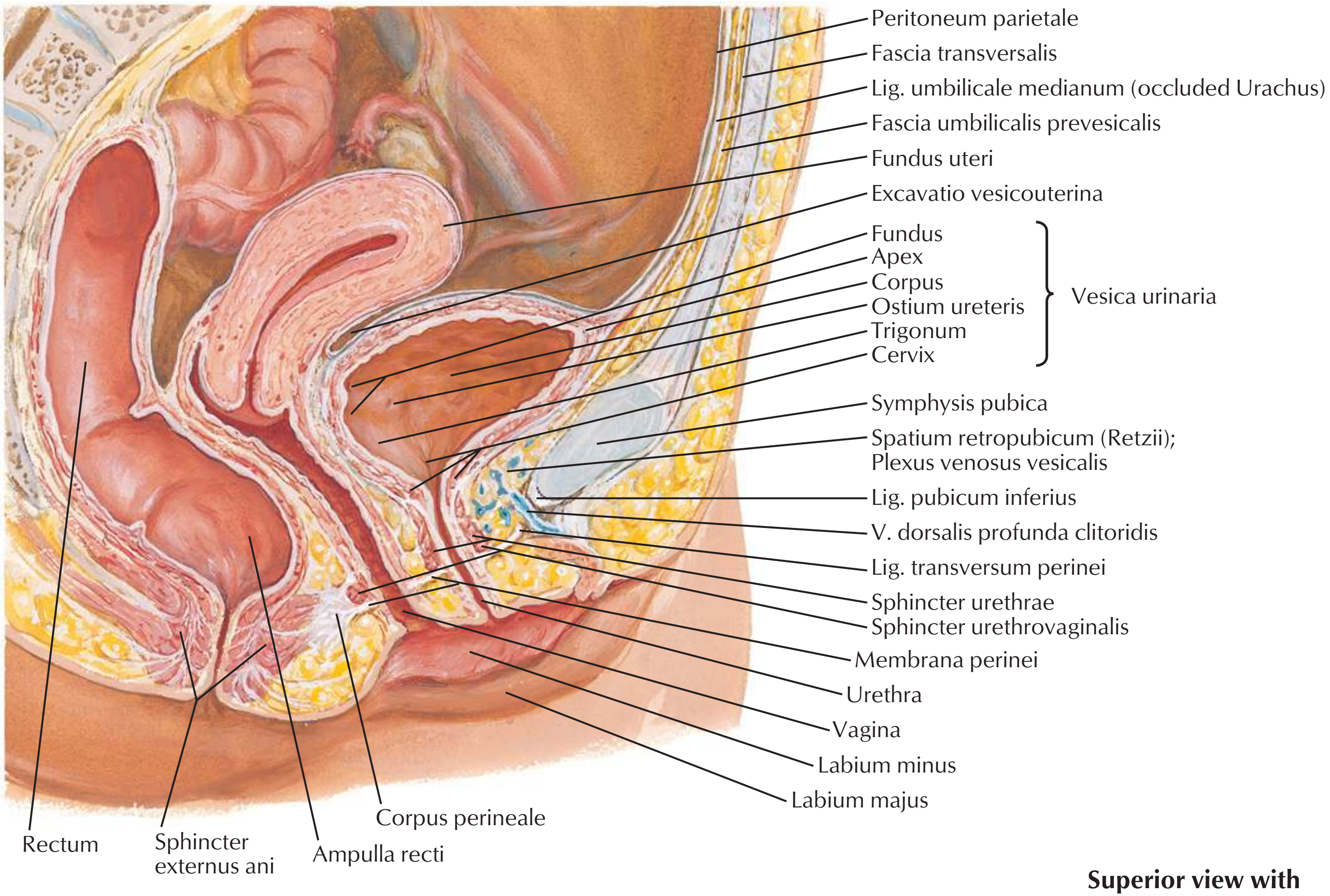

A. and V. iliaca externa
Peritoneum parietale
M. rectus abdominis
Lamina anterior vaginae m. recti abdominis
Fascia transversalis
Fascia umbilicalis prevesicalis
Tela subcutanea abdominis
Panniculus adiposus (Fascia Camperi)
Stratum membranosum (Fascia Scarpae)
Ramus superior ossis pubis (*cut*)
Lig. fundiforme penis
Lig. suspensorium penis
Plexus venosus vesicalis (in Spatium retropubicum (Retzii)
V. dorsalis profunda penis
Corpus cavernosum penis
Fascia penis (Buck's fascia)
Corpus spongiosum penis
Tunicae dartae penis and scroti (Dartos fascia of penis and scrotum)
Testis
Ductus (Vas) deferens
Vesica urinaria; Fascia vesicalis
Ureter (*cut*)
Glandula seminalis (Glandula vesiculosa)
Excavatio rectovesicalis
Rectum
Fascia rectoprostatica (of Denonvilliers)
Prostata (covered by fascia)
Ramus ischiopubicus (*cut*)
Diaphragma pelvis (Levator ani)
M. transversus profundus perinei
Corpus perineale
Pars profunda
Pars superficialis
Pars subcutanea
Sphincter externus ani
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Tunica darta scroti (Dartos fascia of scrotum)
Fascia spermatica externa

Median (sagittal) section

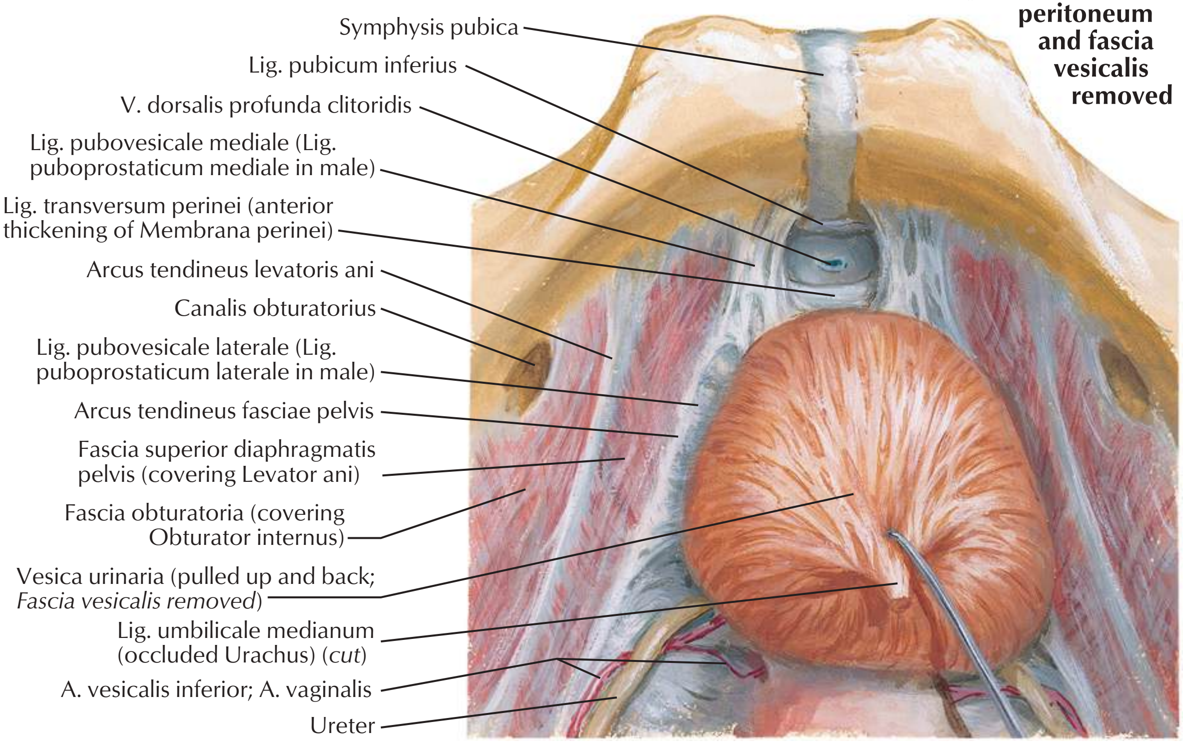

Lig. umbilicale medianum
Vesica urinaria
Apex
Fundus
Corpus
Trigonum
Cervix
Symphysis pubica
Lig. suspensorium penis
Lig. pubicum inferius
Plexus venosus prostaticus
Lig. transversum perinei (anterior thickening of Membrana perinei)
Membrana perinei
Spatium superficiale perinei
Corpus cavernosum penis
Corpus spongiosum penis
Tunicae dartae penis and scroti (Dartos fascia)
Fascia penis (Buck's fascia)
Preputium penis
Glans penis; Ostium externum urethrae
Fascia vesicalis
Excavatio rectovesicalis
Rectum
Glandula seminalis (Glandula vesiculosa)
Prostata
Fascia recto-prostatica (of Denonvilliers)
Sphincter externus urethrae
Glandula bulbourethralis (Cowperi)
Corpus perineale
M. bulbospongiosus
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Fascia penis (Buck's fascia)
Septum scroti
Fossa navicularis
F. Netter M.D.
C.Machado M.D.

Urinary Bladder: Orientation and Supports

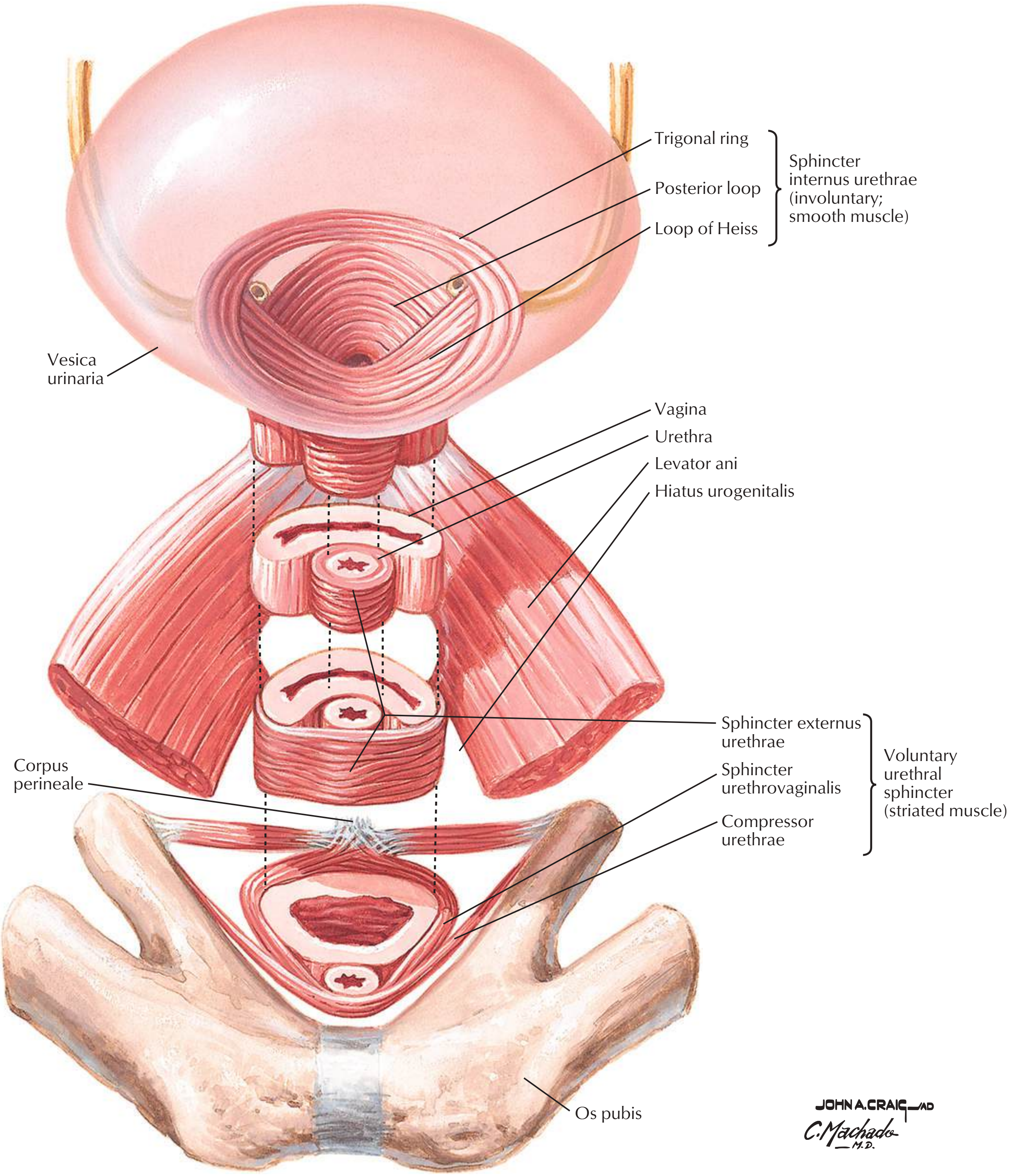
Female: midsagittal section


Peritoneum parietale
Fascia transversalis
Lig. umbilicale medianum (occluded Urachus)
Fascia umbilicalis prevesicalis
Fundus uteri
Excavatio vesicouterina
Fundus
Apex
Corpus
Ostium ureteris
Trigonum
Cervix
Vesica urinaria
Symphysis pubica
Spatium retropubicum (Retzii);
Plexus venosus vesicalis
Lig. pubicum inferius
V. dorsalis profunda clitoridis
Lig. transversum perinei
Sphincter urethrae
Sphincter urethrovaginalis
Membrana perinei
Urethra
Vagina
Labium minus
Labium majus
Corpus perineale
Rectum
Sphincter externus ani
Ampulla recti

Superior view with peritoneum and fascia vesicalis removed

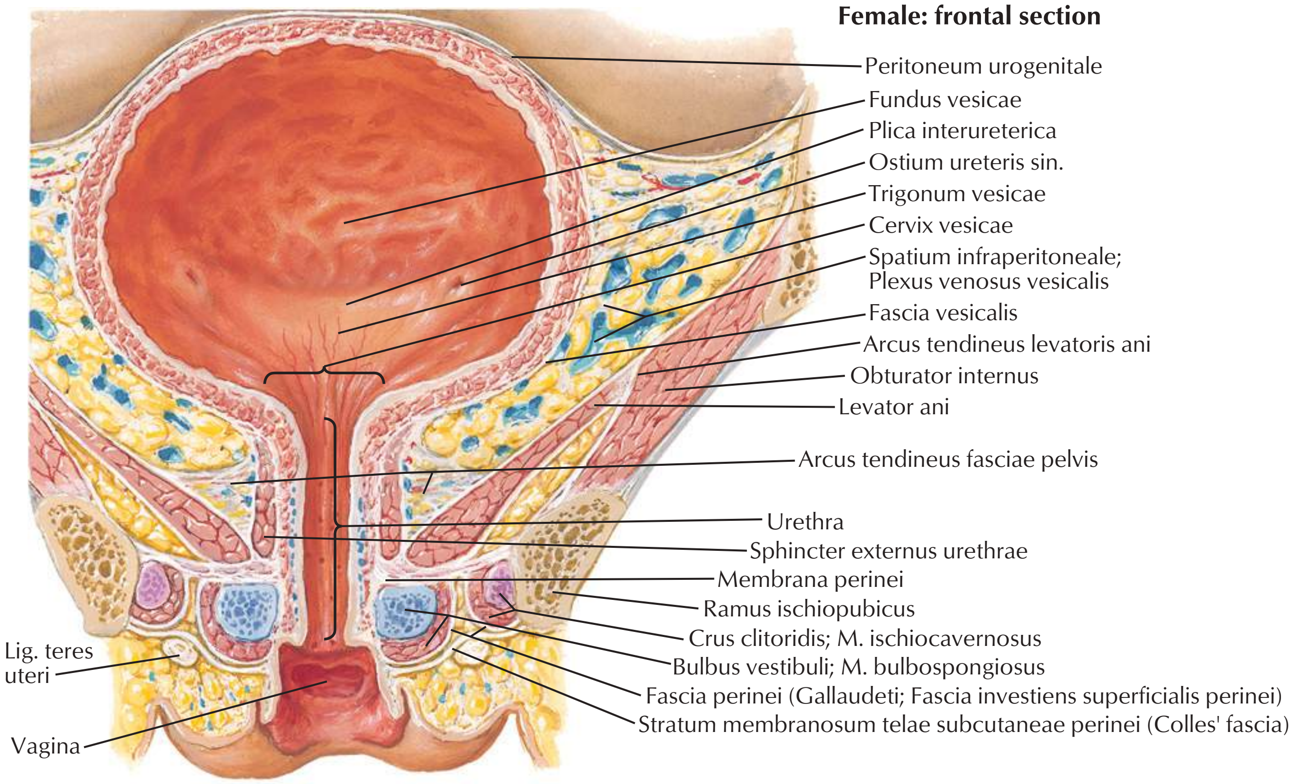

Symphysis pubica
Lig. pubicum inferius
V. dorsalis profunda clitoridis
Lig. pubovesicale mediale (Lig. puboprostaticum mediale in male)
Lig. transversum perinei (anterior thickening of Membrana perinei)
Arcus tendineus levatoris ani
Canalis obturatorius
Lig. pubovesicale laterale (Lig. puboprostaticum laterale in male)
Arcus tendineus fasciae pelvis
Fascia superior diaphragmatis pelvis (covering Levator ani)
Fascia obturatoria (covering Obturator internus)
Vesica urinaria (pulled up and back; *Fascia vesicalis removed*)
Lig. umbilicale medianum (occluded Urachus) (*cut*)
A. vesicalis inferior; A. vaginalis
Ureter

See also Plates 352, 360


Trigonal ring
Posterior loop
Loop of Heiss
Sphincter internus urethrae (involuntary; smooth muscle)
Vesica urinaria
Vagina
Urethra
Levator ani
Hiatus urogenitalis
Sphincter externus urethrae
Sphincter urethrovaginalis
Compressor urethrae
Voluntary urethral sphincter (striated muscle)
Corpus perineale
Os pubis
JOHN A.CRAIG_AD
C.Machado M.D.

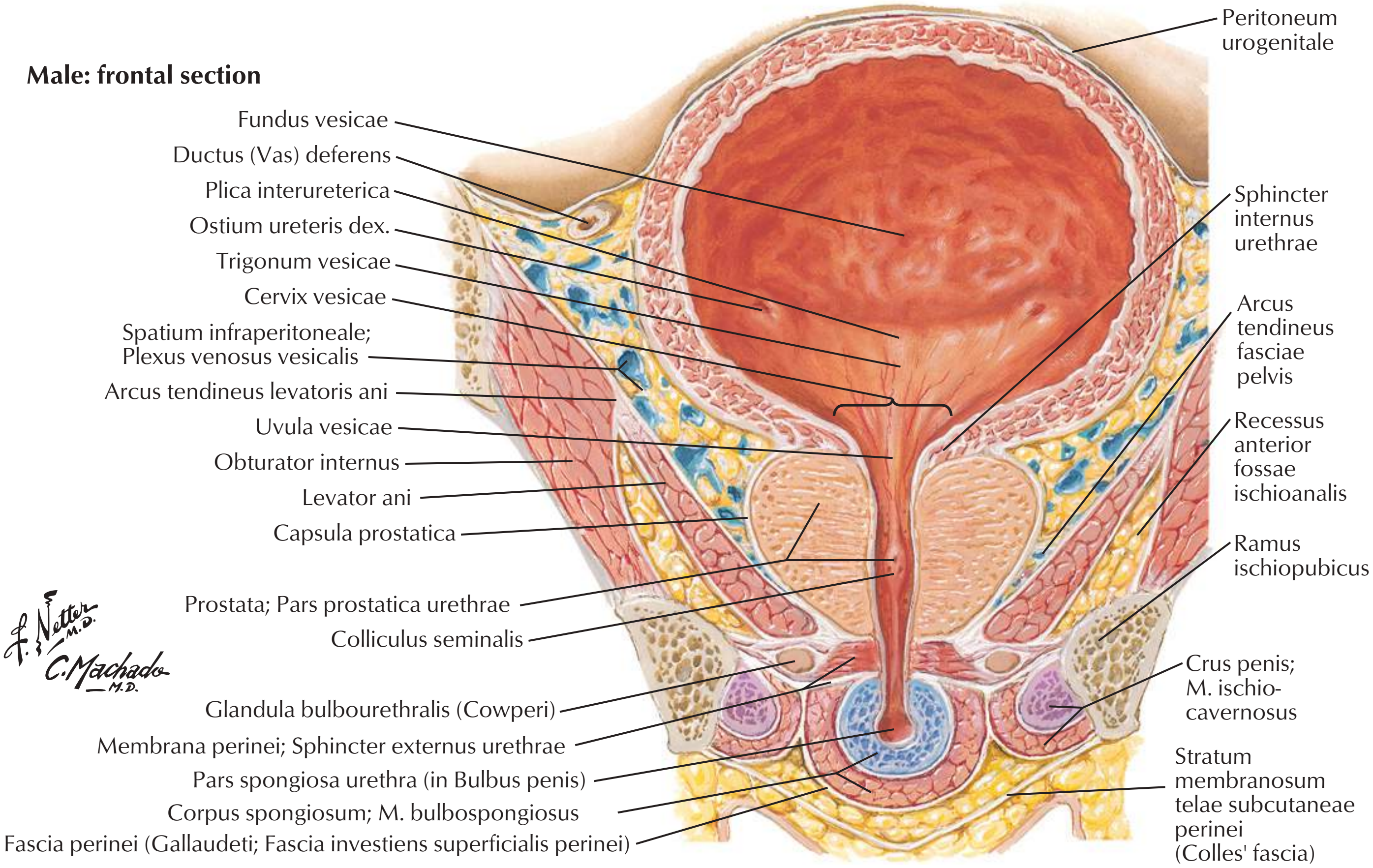
Urinary Bladder: Female and Male

See also Plates 345, 349, 385



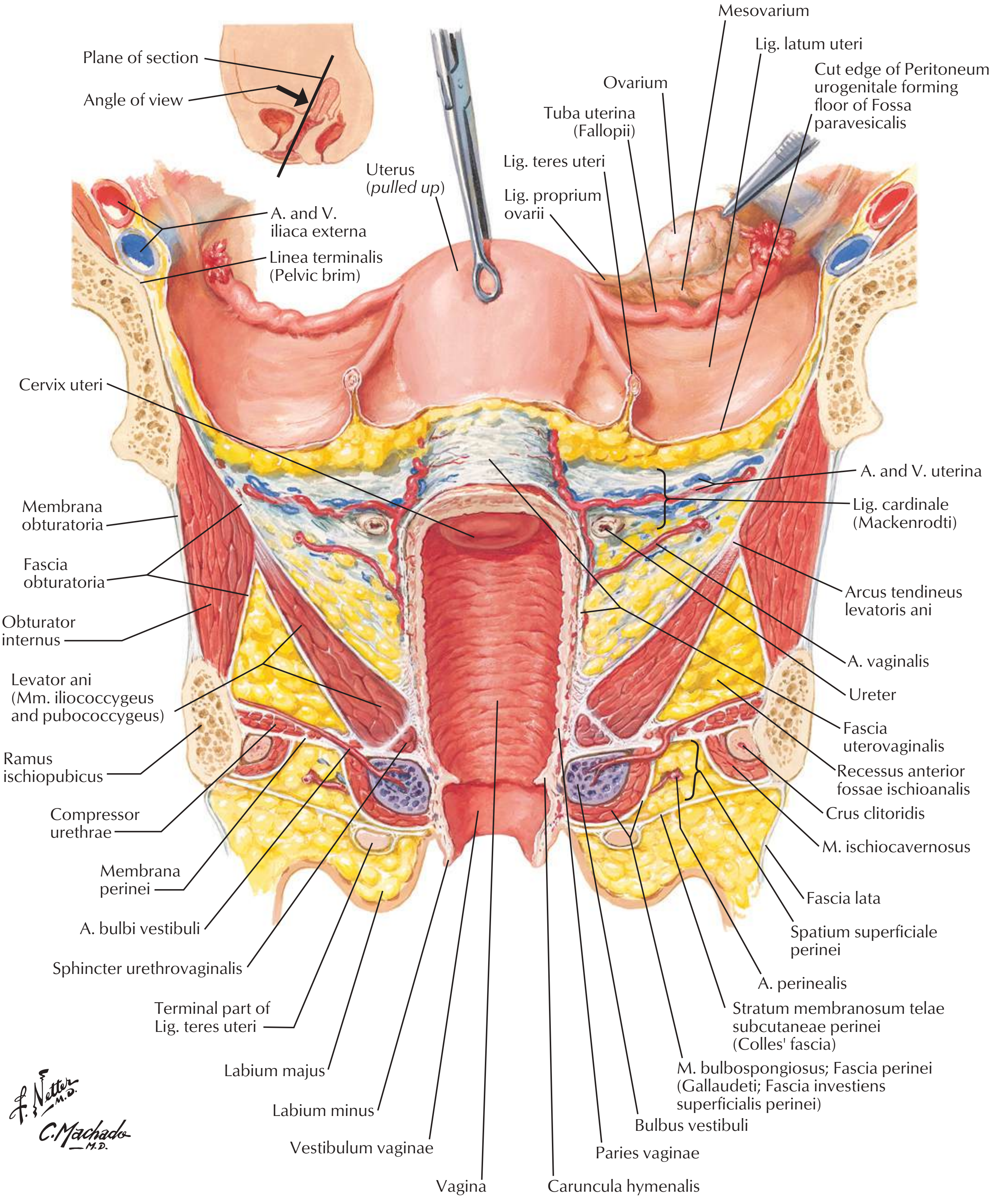
Female: frontal section

Peritoneum urogenitale
Fundus vesicae
Plica interureterica
Ostium ureteris sin.
Trigonum vesicae
Cervix vesicae
Spatium infraperitoneale; Plexus venosus vesicalis
Fascia vesicalis
Arcus tendineus levatoris ani
Obturator internus
Levator ani
Arcus tendineus fasciae pelvis
Urethra
Sphincter externus urethrae
Membrana perinei
Ramus ischiopubicus
Crus clitoridis; M. ischiocavernosus
Bulbus vestibuli; M. bulbospongiosus
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Lig. teres uteri
Vagina

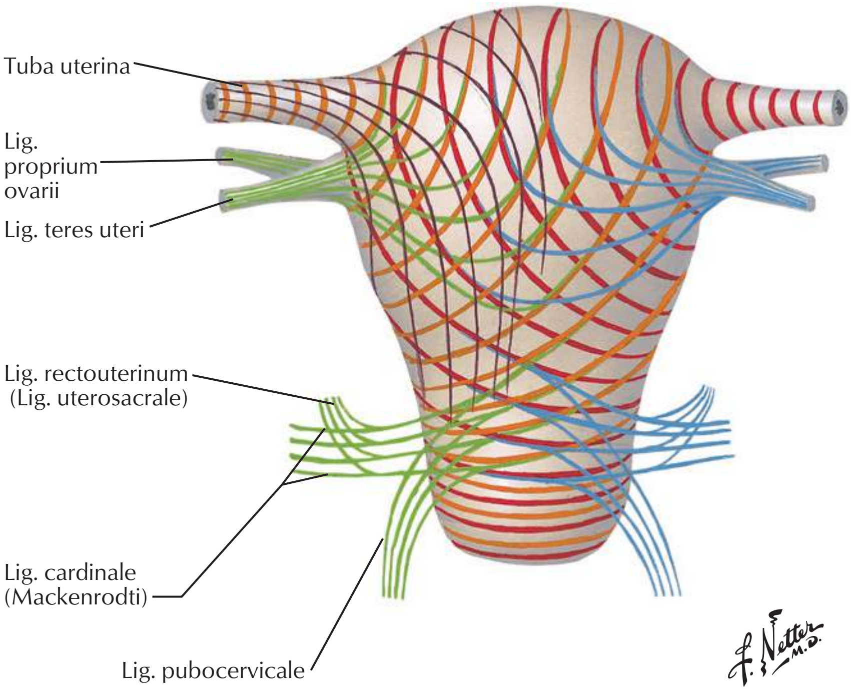


Male: frontal section

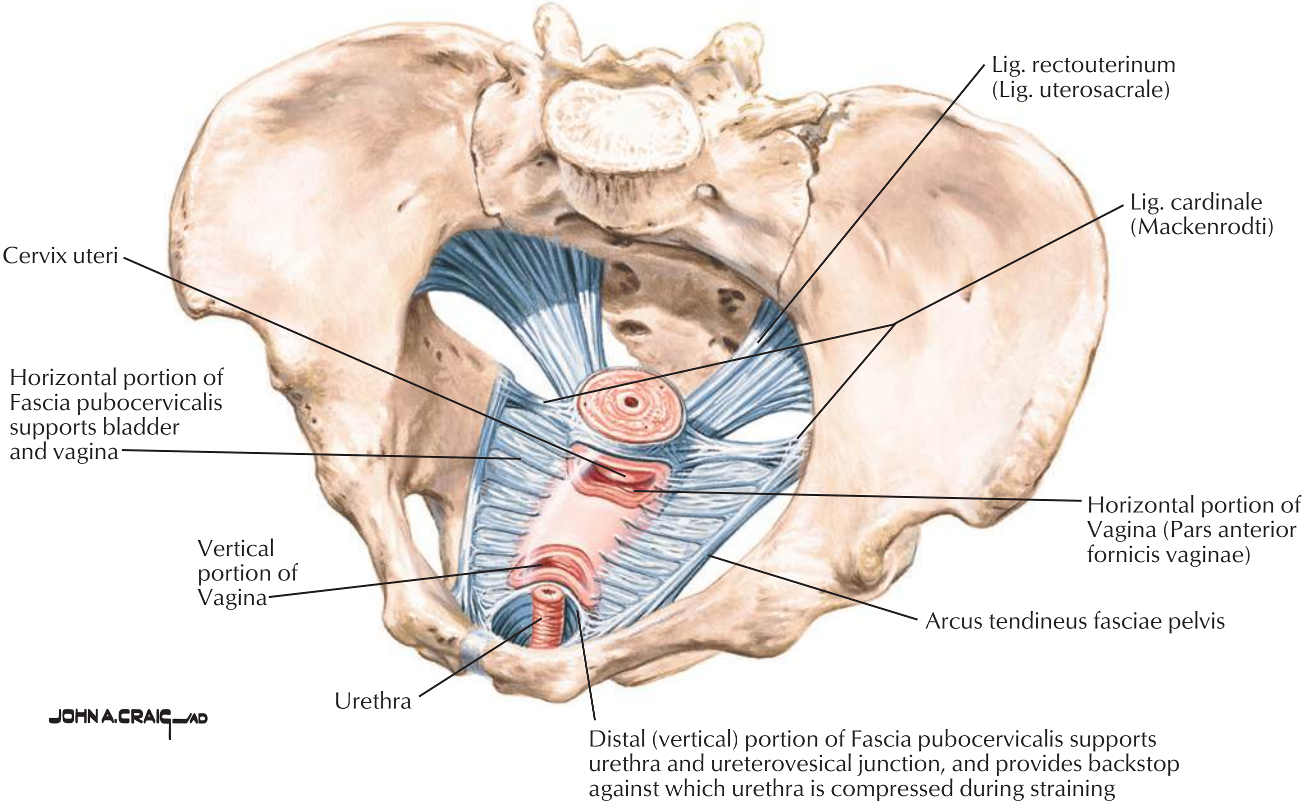
Peritoneum urogenitale
Fundus vesicae
Ductus (Vas) deferens
Plica interureterica
Ostium ureteris dex.
Trigonum vesicae
Cervix vesicae
Spatium infraperitoneale; Plexus venosus vesicalis
Arcus tendineus levatoris ani
Uvula vesicae
Obturator internus
Levator ani
Capsula prostatica
Prostata; Pars prostatica urethrae
Colliculus seminalis
Glandula bulbourethralis (Cowperi)
Membrana perinei; Sphincter externus urethrae
Pars spongiosa urethra (in Bulbus penis)
Corpus spongiosum; M. bulbospongiosus
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Sphincter internus urethrae
Arcus tendineus fasciae pelvis
Recessus anterior fossae ischioanalis
Ramus ischiopubicus
Crus penis; M. ischio-cavernosus
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
F. Netter M.D.
C. Machado M.D.

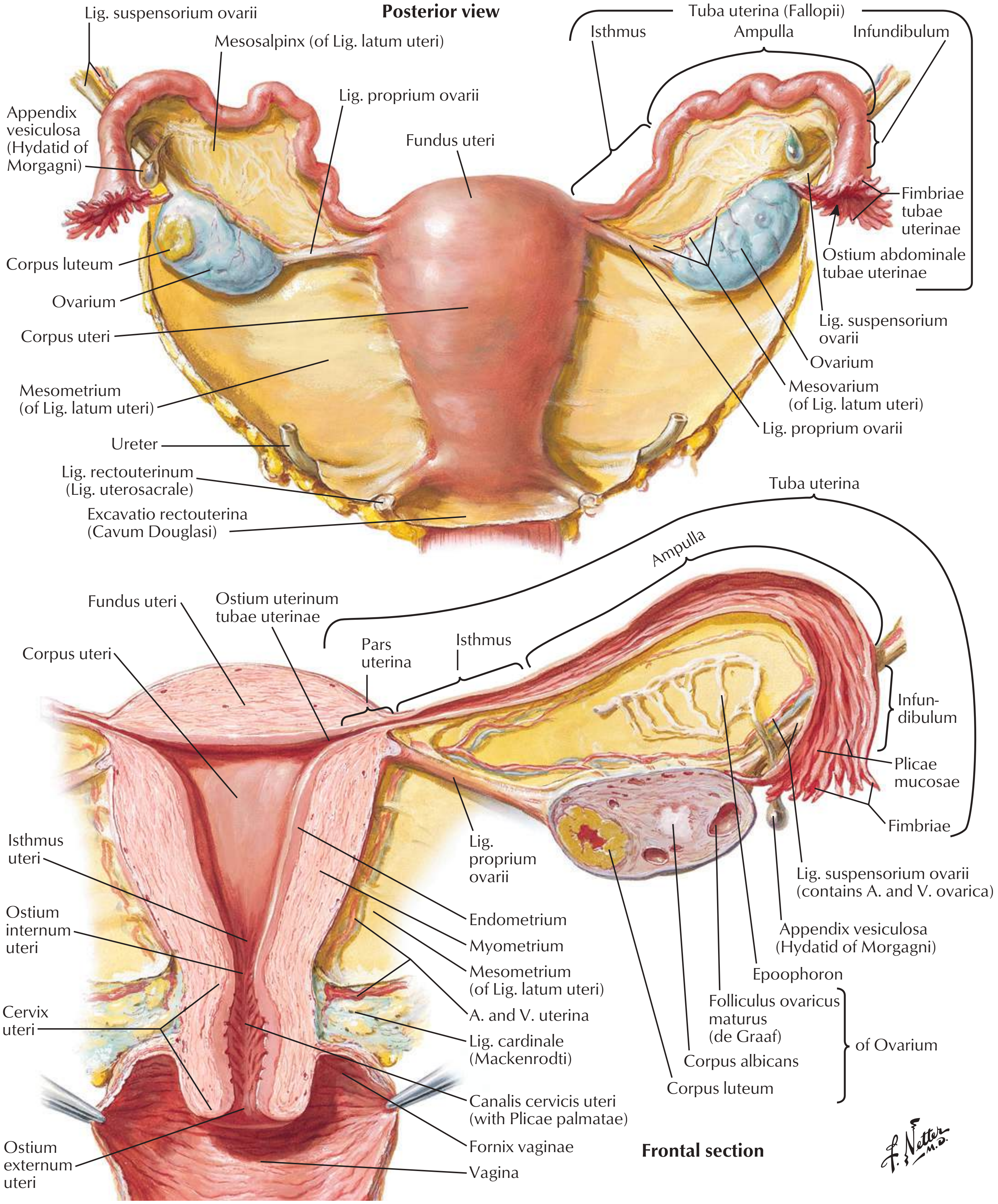

Plane of section
Angle of view
Uterus (*pulled up*)
Mesovarium
Lig. latum uteri
Cut edge of Peritoneum urogenitale forming floor of Fossa paravesicalis
Ovarium
Tuba uterina (Fallopii)
Lig. teres uteri
Lig. proprium ovarii
A. and V. iliaca externa
Linea terminalis (Pelvic brim)
Cervix uteri
A. and V. uterina
Lig. cardinale (Mackenrodti)
Membrana obturatoria
Fascia obturatoria
Obturator internus
Arcus tendineus levatoris ani
A. vaginalis
Ureter
Levator ani (Mm. iliococcygeus and pubococcygeus)
Fascia uterovaginalis
Ramus ischiopubicus
Recessus anterior fossae ischioanalis
Crus clitoridis
Compressor urethrae
M. ischiocavernosus
Membrana perinei
Fascia lata
A. bulbi vestibuli
Spatium superficiale perinei
Sphincter urethrovaginalis
A. perinealis
Terminal part of Lig. teres uteri
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Labium majus
M. bulbospongiosus; Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Labium minus
Bulbus vestibuli
Vestibulum vaginae
Paries vaginae
Vagina
Caruncula hymenalis
F. Netter M.D.
C. Machado M.D.

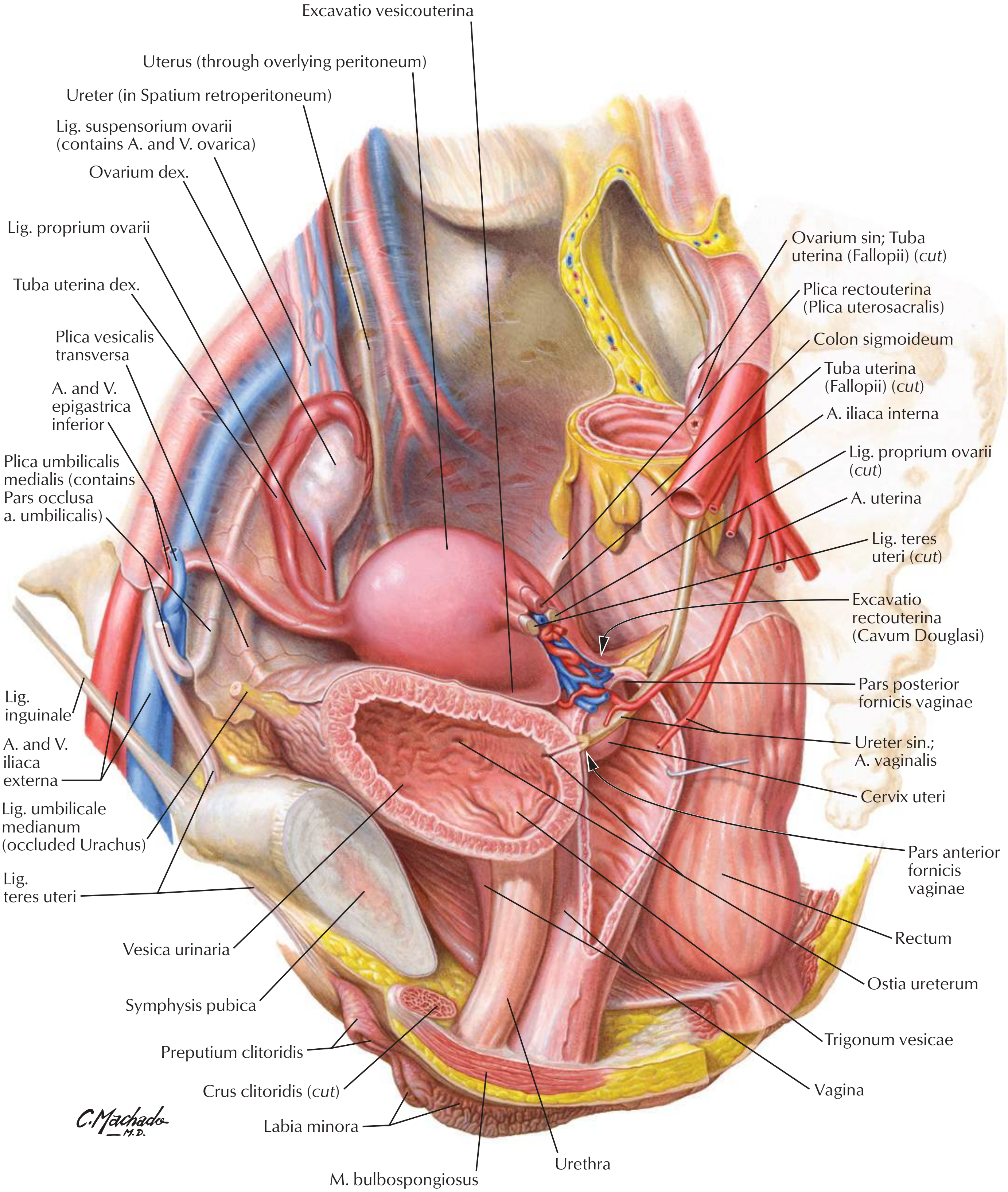
Fascial ligaments of uterus

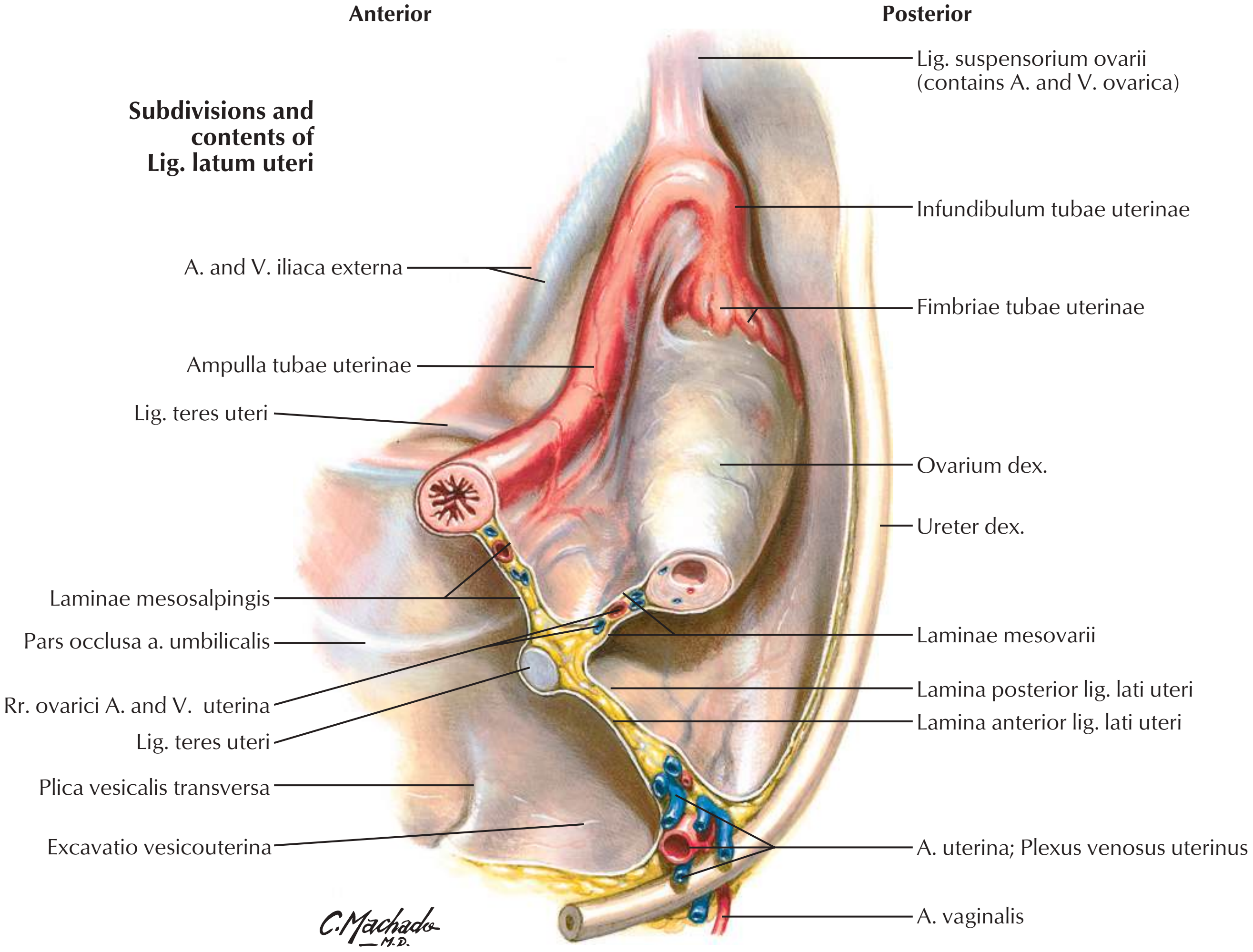

Tuba uterina
Lig. proprium ovarii
Lig. teres uteri
Lig. rectouterinum (Lig. uterosacrale)
Lig. cardinale (Mackenrodti)
Lig. pubocervicale

Pelvic fascia and ligaments

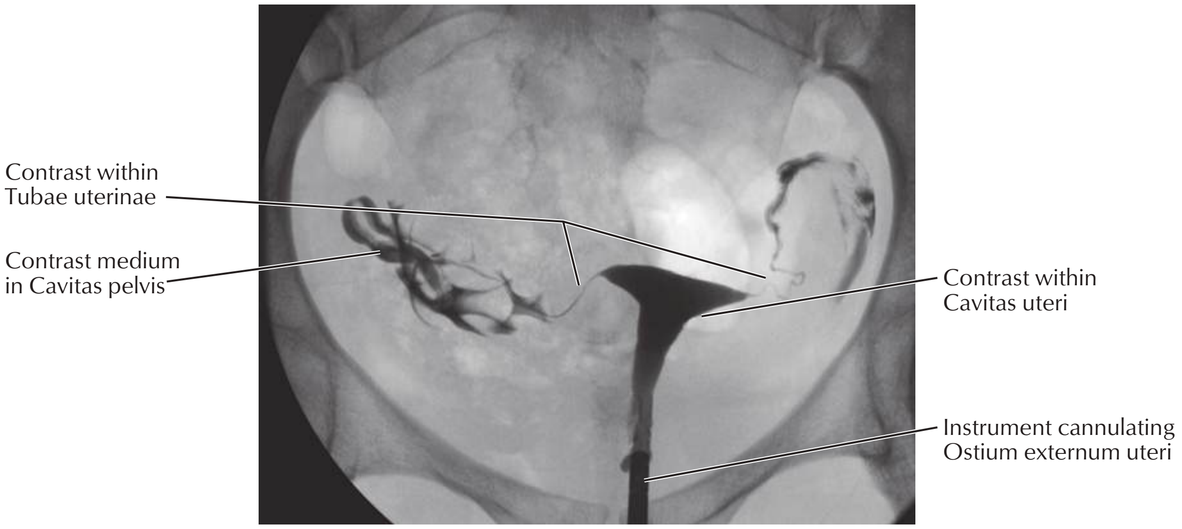

Lig. rectouterinum (Lig. uterosacrale)
Lig. cardinale (Mackenrodti)
Cervix uteri
Horizontal portion of Fascia pubocervicalis supports bladder and vagina
Horizontal portion of Vagina (Pars anterior fornicis vaginae)
Vertical portion of Vagina
Arcus tendineus fasciae pelvis
Urethra
Distal (vertical) portion of Fascia pubocervicalis supports urethra and ureterovesical junction, and provides backstop against which urethra is compressed during straining
JOHN A.CRAIG AD


Posterior view
Lig. suspensorium ovarii
Mesosalpinx (of Lig. latum uteri)
Appendix vesiculosa (Hydatid of Morgagni)
Lig. proprium ovarii
Fundus uteri
Corpus luteum
Ovarium
Corpus uteri
Mesometrium (of Lig. latum uteri)
Ureter
Lig. rectouterinum (Lig. uterosacrale)
Excavatio rectouterina (Cavum Douglasi)
Tuba uterina (Fallopii)
Isthmus
Ampulla
Infundibulum
Fimbriae tubae uterinae
Ostium abdominale tubae uterinae
Lig. suspensorium ovarii
Ovarium
Mesovarium (of Lig. latum uteri)
Lig. proprium ovarii
Tuba uterina
Ampulla
Fundus uteri
Ostium uterinum tubae uterinae
Corpus uteri
Pars uterina
Isthmus
Infun-dibulum
Plicae mucosae
Fimbriae
Lig. proprium ovarii
Isthmus uteri
Ostium internum uteri
Cervix uteri
Ostium externum uteri
Endometrium
Myometrium
Mesometrium (of Lig. latum uteri)
A. and V. uterina
Lig. cardinale (Mackenrodti)
Canalis cervicis uteri (with Plicae palmatae)
Fornix vaginae
Vagina
Lig. suspensorium ovarii (contains A. and V. ovarica)
Appendix vesiculosa (Hydatid of Morgagni)
Epoophoron
Folliculus ovaricus maturus (de Graaf)
Corpus albicans
Corpus luteum
of Ovarium
Frontal section
F. Netter M.D.


Excavatio vesicouterina
Uterus (through overlying peritoneum)
Ureter (in Spatium retroperitoneum)
Lig. suspensorium ovarii (contains A. and V. ovarica)
Ovarium dex.
Lig. proprium ovarii
Tuba uterina dex.
Plica vesicalis transversa
A. and V. epigastrica inferior
Plica umbilicalis medialis (contains Pars occlusa a. umbilicalis)
Lig. inguinale
A. and V. iliaca externa
Lig. umbilicale medianum (occluded Urachus)
Lig. teres uteri
Vesica urinaria
Symphysis pubica
Preputium clitoridis
Crus clitoridis (*cut*)
Labia minora
M. bulbospongiosus
Urethra
Vagina
Trigonum vesicae
Ostia ureterum
Rectum
Pars anterior fornicis vaginae
Cervix uteri
Ureter sin.; A. vaginalis
Pars posterior fornicis vaginae
Excavatio rectouterina (Cavum Douglasi)
Lig. teres uteri (*cut*)
A. uterina
Lig. proprium ovarii (*cut*)
A. iliaca interna
Tuba uterina (Fallopii) (*cut*)
Colon sigmoideum
Plica rectouterina (Plica uterosacralis)
Ovarium sin; Tuba uterina (Fallopii) (*cut*)
C. Machado M.D.

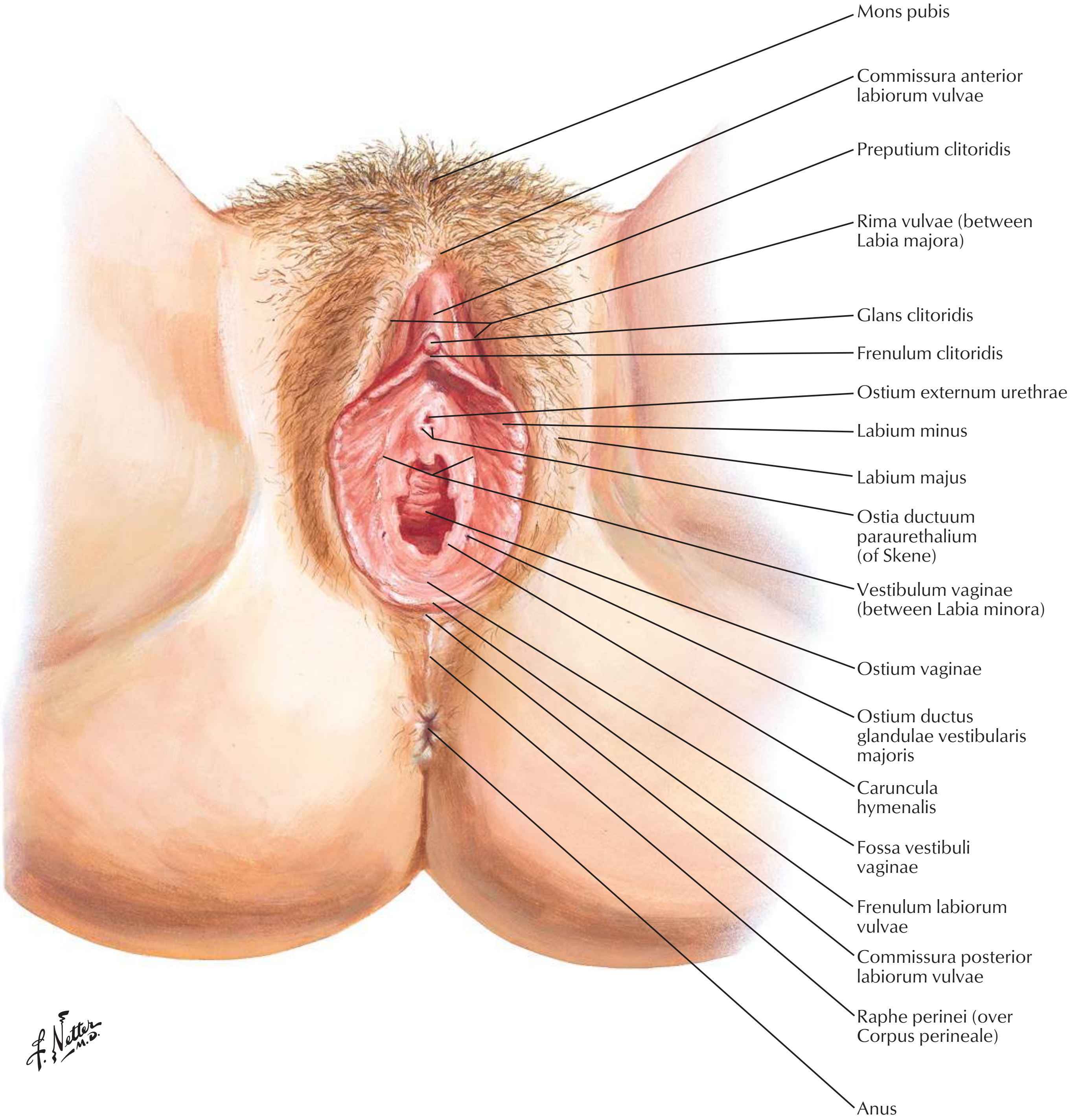

Anterior
Posterior
Subdivisions and contents of Lig. latum uteri
Lig. suspensorium ovarii (contains A. and V. ovarica)
Infundibulum tubae uterinae
A. and V. iliaca externa
Fimbriae tubae uterinae
Ampulla tubae uterinae
Lig. teres uteri
Ovarium dex.
Ureter dex.
Laminae mesosalpingis
Pars occlusa a. umbilicalis
Laminae mesovarii
Rr. ovarici A. and V. uterina
Lamina posterior lig. lati uteri
Lamina anterior lig. lati uteri
Lig. teres uteri
Plica vesicalis transversa
Excavatio vesicouterina
A. uterina; Plexus venosus uterinus
A. vaginalis
C.Machado M.D.

Anteroposterior fluoroscopic image obtained during hysterosalpingography

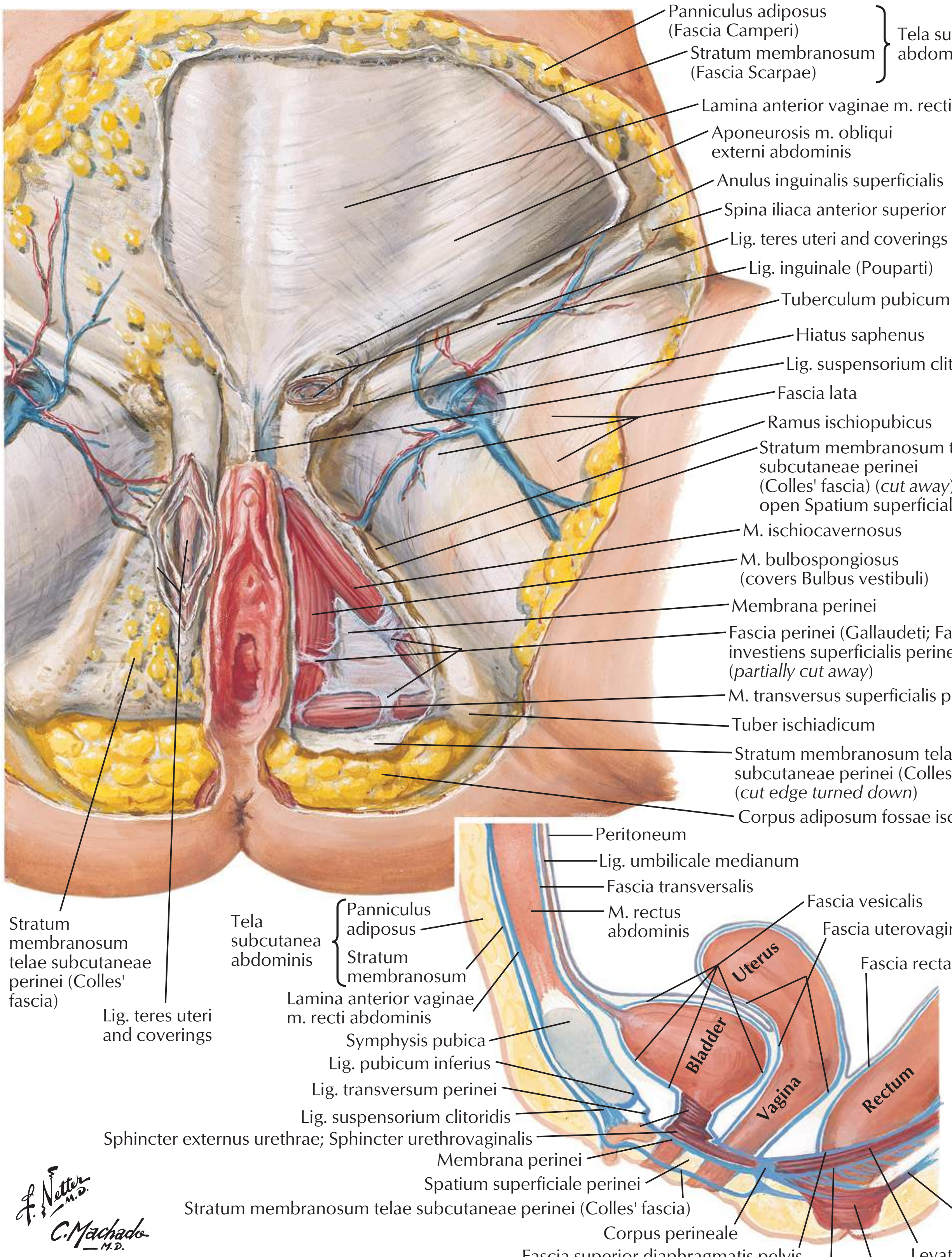

Contrast within Tubae uterinae
Contrast medium in Cavitas pelvis
Contrast within Cavitas uteri
Instrument cannulating Ostium externum uteri

Female Perineum and External Genitalia (Vulva)

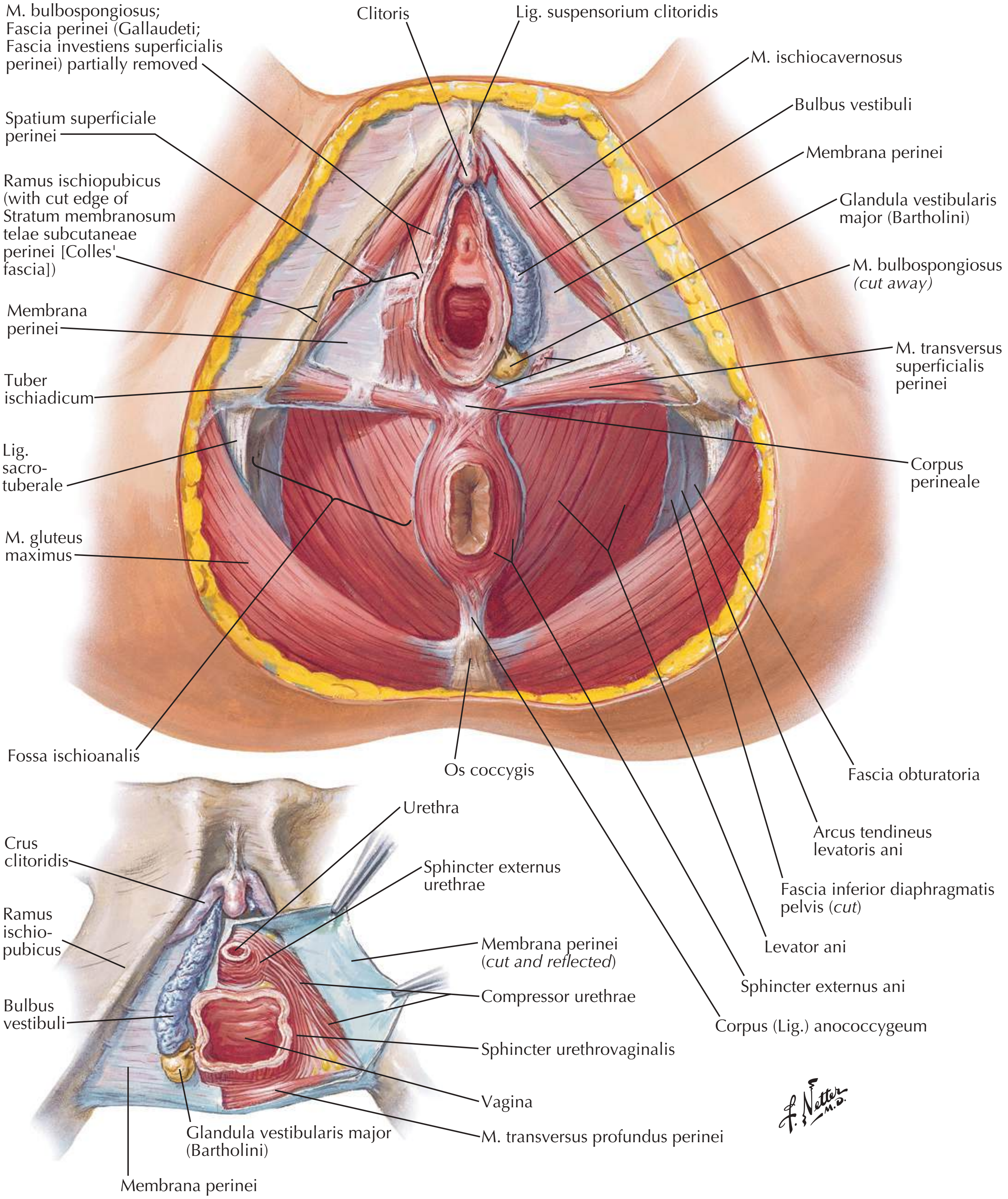
See also Plates 386, 389, 395


Mons pubis
Commissura anterior labiorum vulvae
Preputium clitoridis
Rima vulvae (between Labia majora)
Glans clitoridis
Frenulum clitoridis
Ostium externum urethrae
Labium minus
Labium majus
Ostia ductuum paraurethalium (of Skene)
Vestibulum vaginae (between Labia minora)
Ostium vaginae
Ostium ductus glandulae vestibularis majoris
Caruncula hymenalis
Fossa vestibuli vaginae
Frenulum labiorum vulvae
Commissura posterior labiorum vulvae
Raphe perinei (over Corpus perineale)
Anus

Female Perineum (Superficial Dissection)


Panniculus adiposus (Fascia Camperi)
Stratum membranosum (Fascia Scarpae)
Tela subcutanea abdominis
Lamina anterior vaginae m. recti abdominis
Aponeurosis m. obliqui externi abdominis
Anulus inguinalis superficialis
Spina iliaca anterior superior
Lig. teres uteri and coverings (*cut*)
Lig. inguinale (Pouparti)
Tuberculum pubicum
Hiatus saphenus
Lig. suspensorium clitoridis
Fascia lata
Ramus ischiopubicus
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut away*) to open Spatium superficiale perinei
M. ischiocavernosus
M. bulbospongiosus (covers Bulbus vestibuli)
Membrana perinei
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei) (*partially cut away*)
M. transversus superficialis perinei
Tuber ischiadicum
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut edge turned down*)
Corpus adiposum fossae ischioanalis
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Lig. teres uteri and coverings
Peritoneum
Lig. umbilicale medianum
Fascia transversalis
M. rectus abdominis
Tela subcutanea abdominis
Panniculus adiposus
Stratum membranosum
Lamina anterior vaginae m. recti abdominis
Symphysis pubica
Lig. pubicum inferius
Lig. transversum perinei
Lig. suspensorium clitoridis
Sphincter externus urethrae; Sphincter urethrovaginalis
Membrana perinei
Spatium superficiale perinei
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Fascia vesicalis
Fascia uterovaginalis
Fascia rectalis
Uterus
Bladder
Vagina
Rectum
Corpus perineale
Fascia superior diaphragmatis pelvis
Fascia inferior diaphragmatis pelvis
Sphincter externus ani
Levator ani
Corpus (Lig.) anococcygeum
F. Netter M.D.
C. Machado M.D.

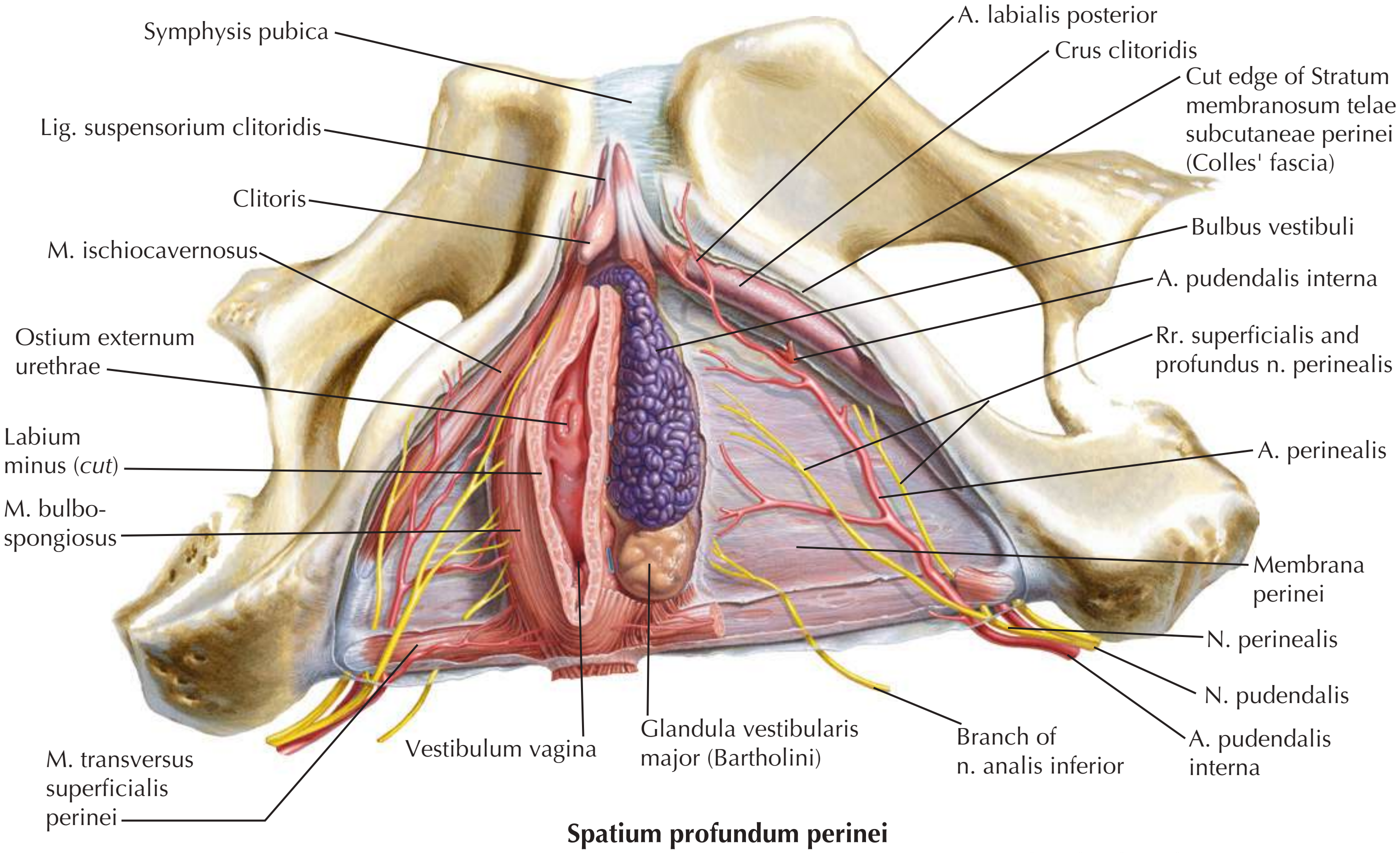
Female Perineum and Deep Perineum


M. bulbospongiosus; Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei) partially removed
Clitoris
Lig. suspensorium clitoridis
M. ischiocavernosus
Spatium superficiale perinei
Bulbus vestibuli
Membrana perinei
Ramus ischiopubicus (with cut edge of Stratum membranosum telae subcutaneae perinei [Colles' fascia])
Glandula vestibularis major (Bartholini)
M. bulbospongiosus (*cut away*)
Membrana perinei
M. transversus superficialis perinei
Tuber ischiadicum
Corpus perineale
Lig. sacro-tuberale
M. gluteus maximus
Fossa ischioanalis
Os coccygis
Fascia obturatoria
Arcus tendineus levatoris ani
Fascia inferior diaphragmatis pelvis (*cut*)
Levator ani
Sphincter externus ani
Corpus (Lig.) anococcygeum
Urethra
Crus clitoridis
Sphincter externus urethrae
Ramus ischio-pubicus
Membrana perinei (*cut and reflected*)
Compressor urethrae
Bulbus vestibuli
Sphincter urethrovaginalis
Vagina
Glandula vestibularis major (Bartholini)
M. transversus profundus perinei
Membrana perinei

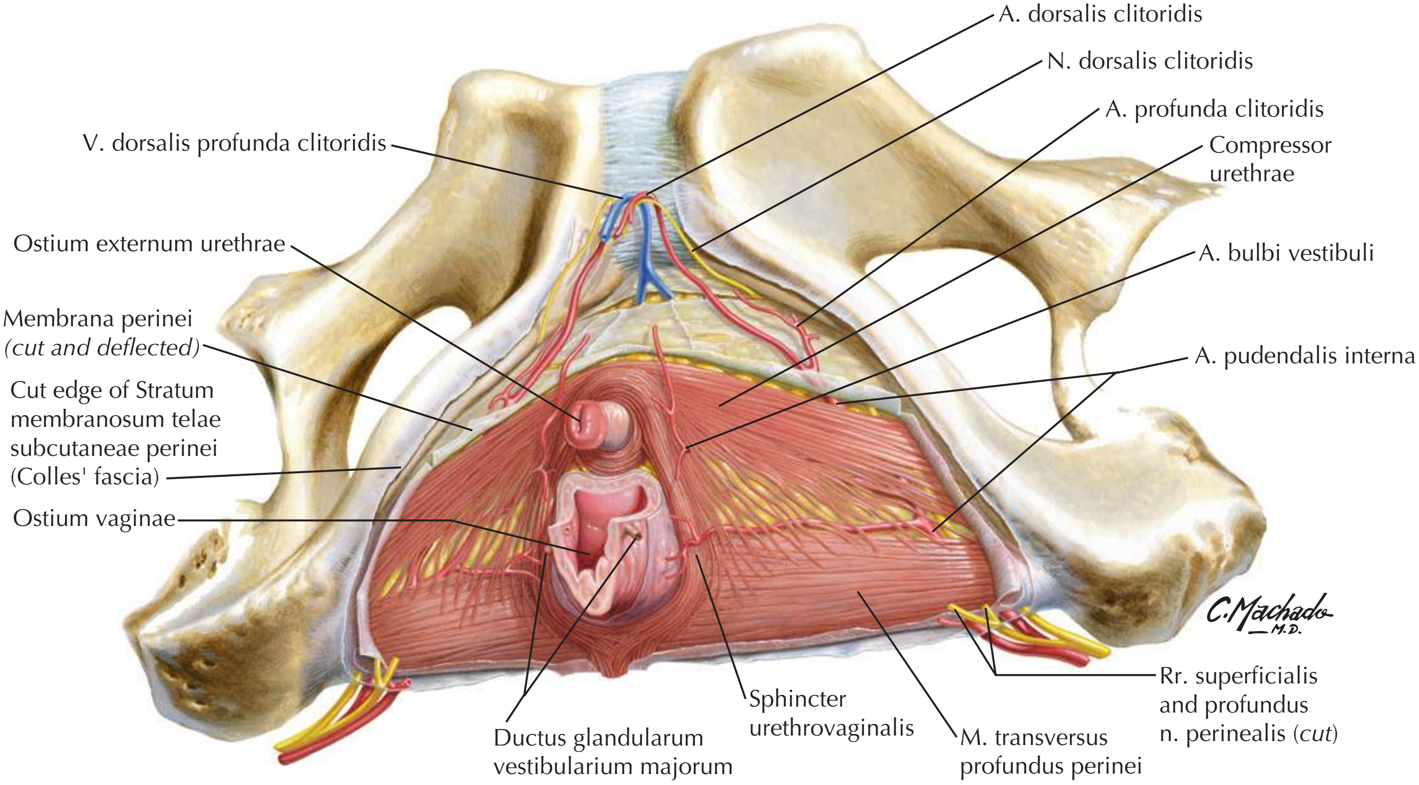
Female Perineal Spaces

See also Plates 386, 395

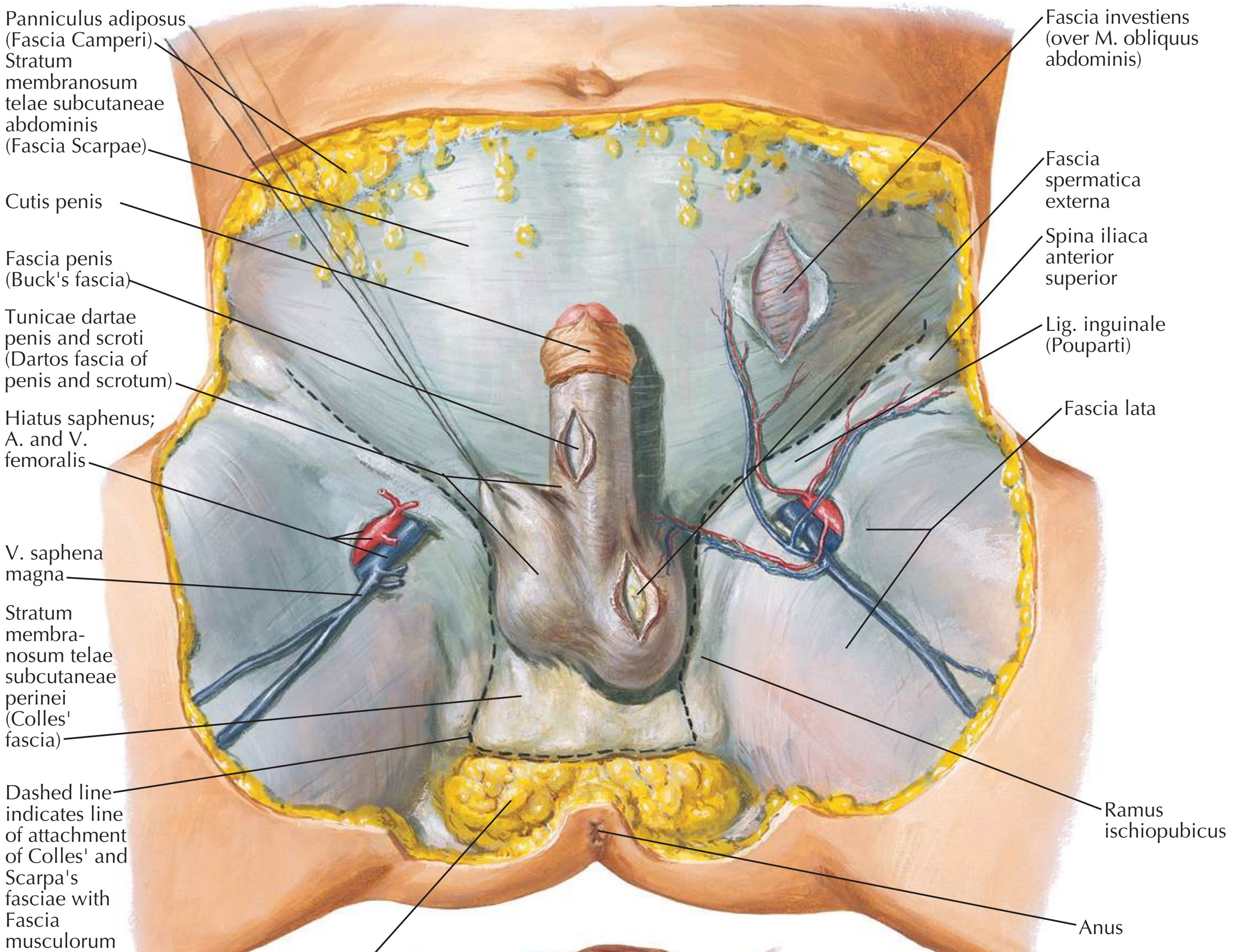
Spatium superficiale perinei

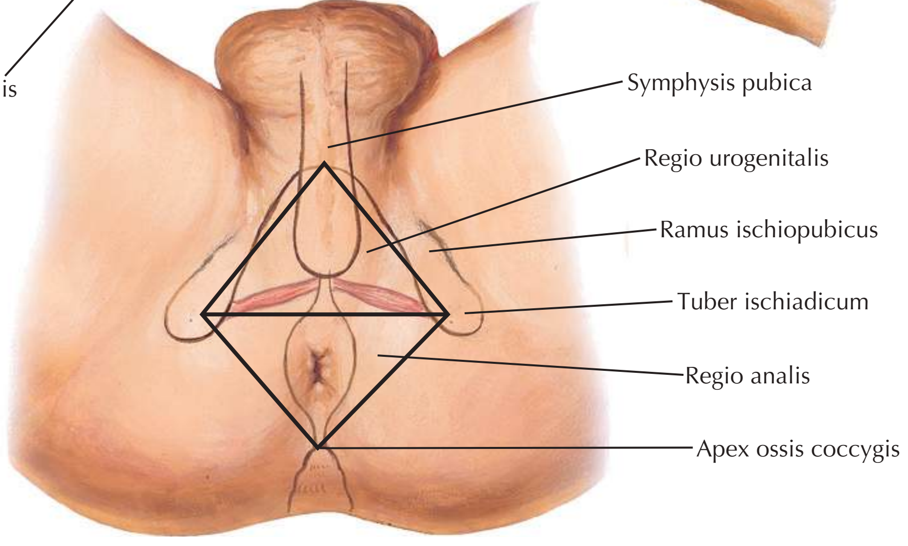

Symphysis pubica
Lig. suspensorium clitoridis
Clitoris
M. ischiocavernosus
Ostium externum urethrae
Labium minus (cut)
M. bulbo-spongiosus
M. transversus superficialis perinei
Vestibulum vagina
Glandula vestibularis major (Bartholini)
Branch of n. analis inferior
A. pudendalis interna
N. pudendalis
N. perinealis
Membrana perinei
A. perinealis
Rr. superficialis and profundus n. perinealis
A. pudendalis interna
Bulbus vestibuli
Cut edge of Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Crus clitoridis
A. labialis posterior

Spatium profundum perinei


V. dorsalis profunda clitoridis
Ostium externum urethrae
Membrana perinei (cut and deflected)
Cut edge of Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Ostium vaginae
Ductus glandularum vestibularium majorum
Sphincter urethrovaginalis
M. transversus profundus perinei
Rr. superficialis and profundus n. perinealis (cut)
A. pudendalis interna
A. bulbi vestibuli
Compressor urethrae
A. profunda clitoridis
N. dorsalis clitoridis
A. dorsalis clitoridis

Male Perineum and External Genitalia (Superficial Dissection)


Panniculus adiposus (Fascia Camperi)
Stratum membranosum telae subcutaneae abdominis (Fascia Scarpae)
Cutis penis
Fascia penis (Buck's fascia)
Tunicae dartae penis and scroti (Dartos fascia of penis and scrotum)
Hiatus saphenus; A. and V. femoralis
V. saphena magna
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Dashed line indicates line of attachment of Colles' and Scarpa's fasciae with Fascia musculorum
Corpus adiposum fossae ischioanalis
Fascia investiens (over M. obliquus abdominis)
Fascia spermatica externa
Spina iliaca anterior superior
Lig. inguinale (Pouparti)
Fascia lata
Ramus ischiopubicus
Anus

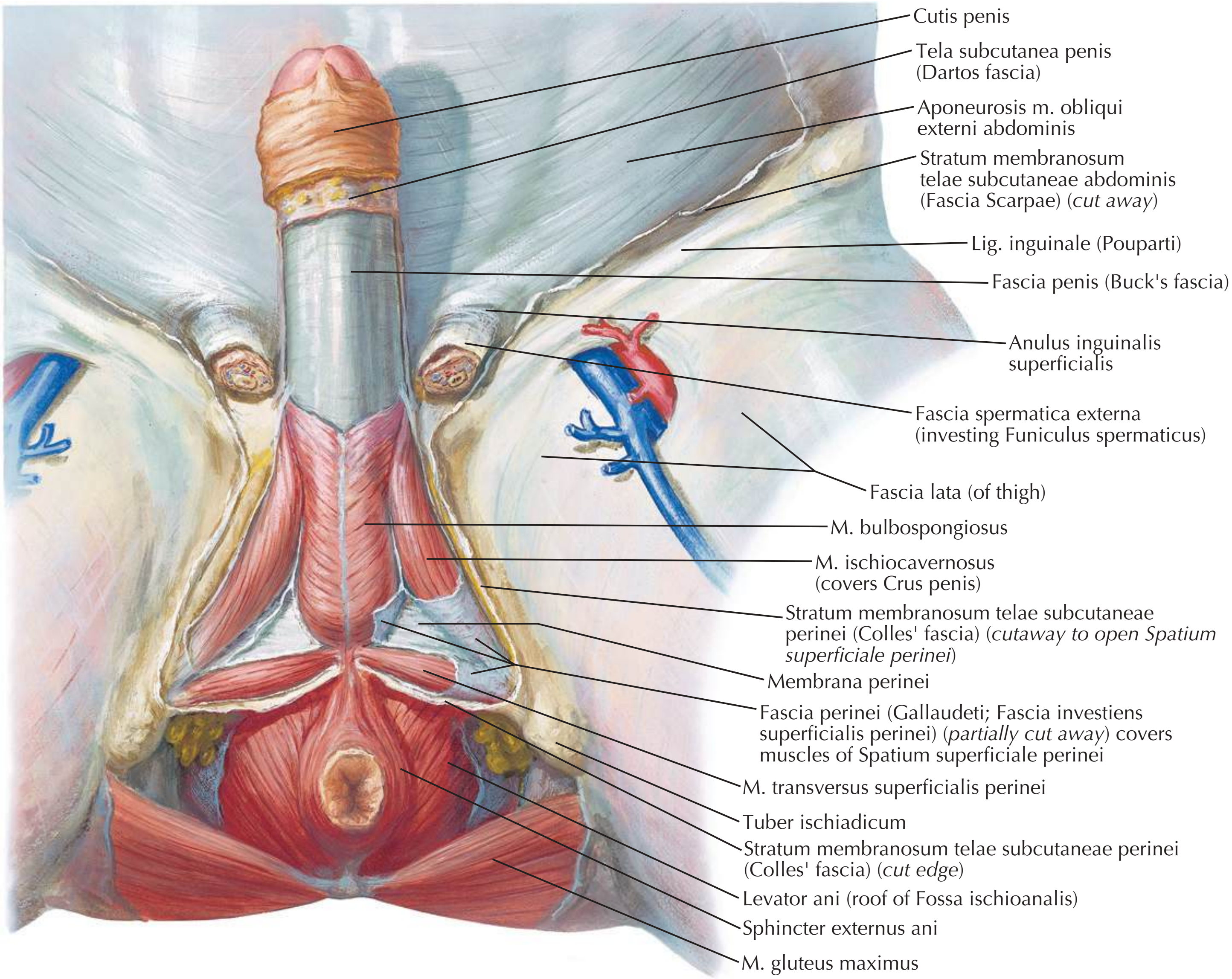


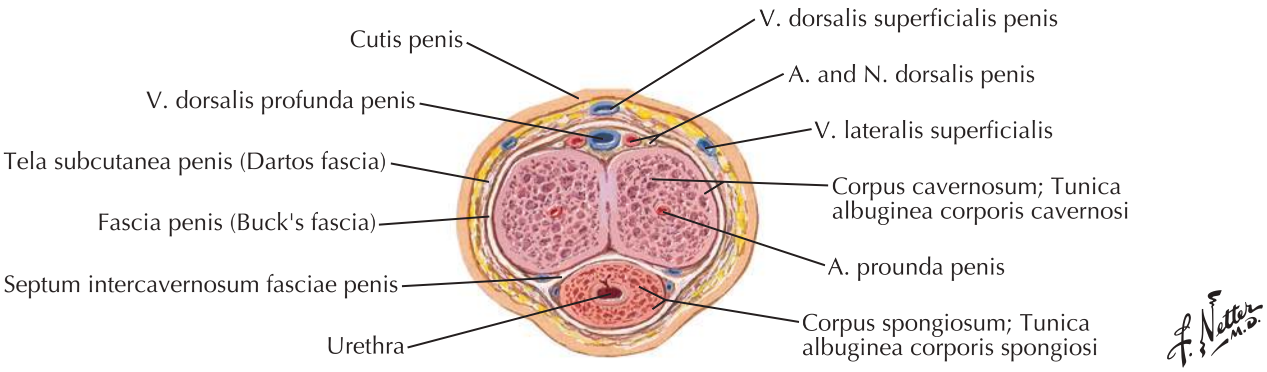
Regions (triangles) of perineum: surface topography

Symphysis pubica
Regio urogenitalis
Ramus ischiopubicus
Tuber ischiadicum
Regio analis
Apex ossis coccygis

Male Perineum and External Genitalia (Deeper Dissection)

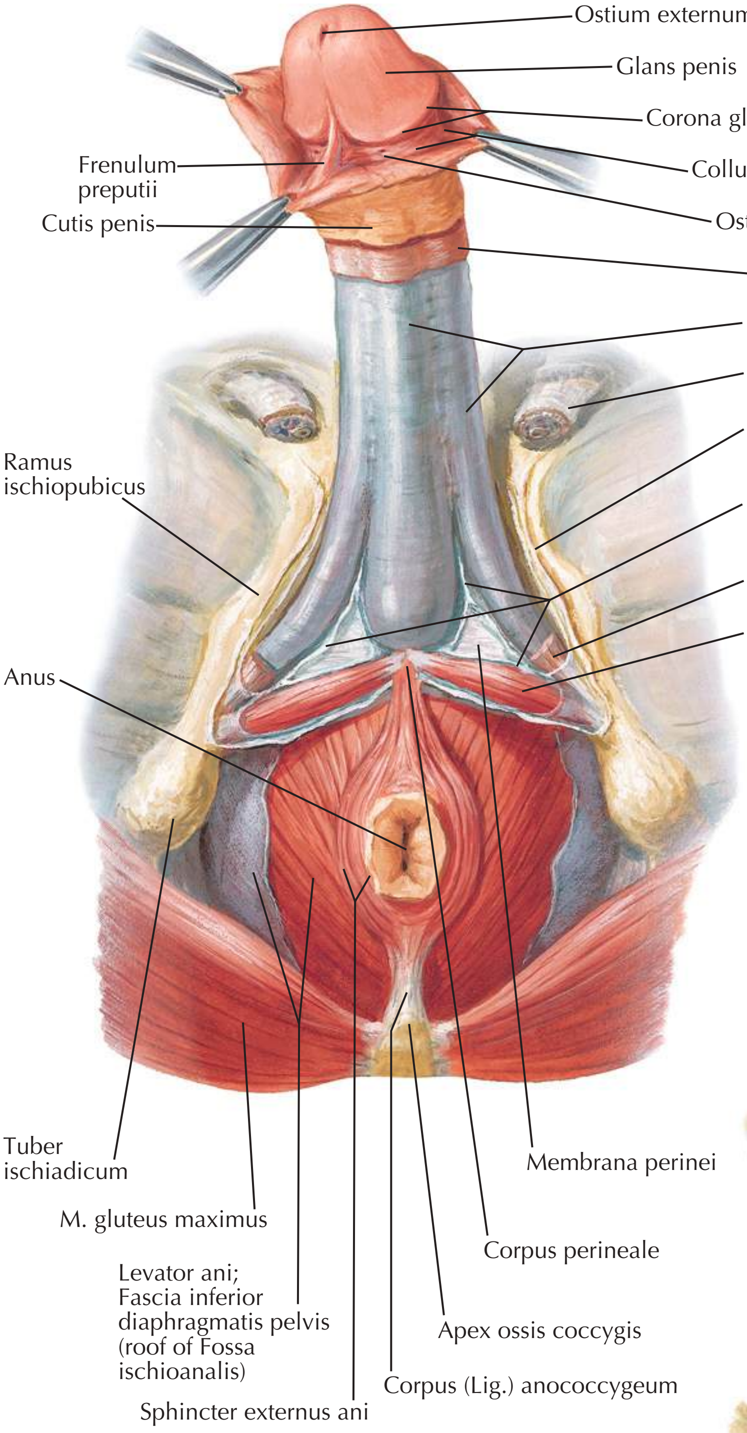
See also Plates 382, 384, 387

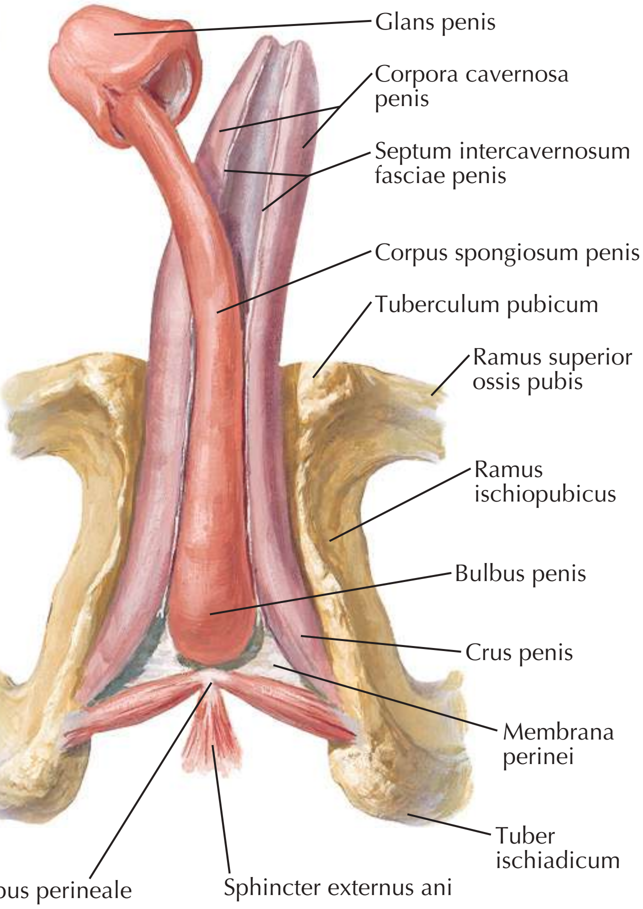

Cutis penis
Tela subcutanea penis (Dartos fascia)
Aponeurosis m. obliqui externi abdominis
Stratum membranosum telae subcutaneae abdominis (Fascia Scarpae) (*cut away*)
Lig. inguinale (Pouparti)
Fascia penis (Buck's fascia)
Anulus inguinalis superficialis
Fascia spermatica externa (investing Funiculus spermaticus)
Fascia lata (of thigh)
M. bulbospongiosus
M. ischiocavernosus (covers Crus penis)
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cutaway to open Spatium superficiale perinei*)
Membrana perinei
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei) (*partially cut away*) covers muscles of Spatium superficiale perinei
M. transversus superficialis perinei
Tuber ischiadicum
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut edge*)
Levator ani (roof of Fossa ischioanalis)
Sphincter externus ani
M. gluteus maximus

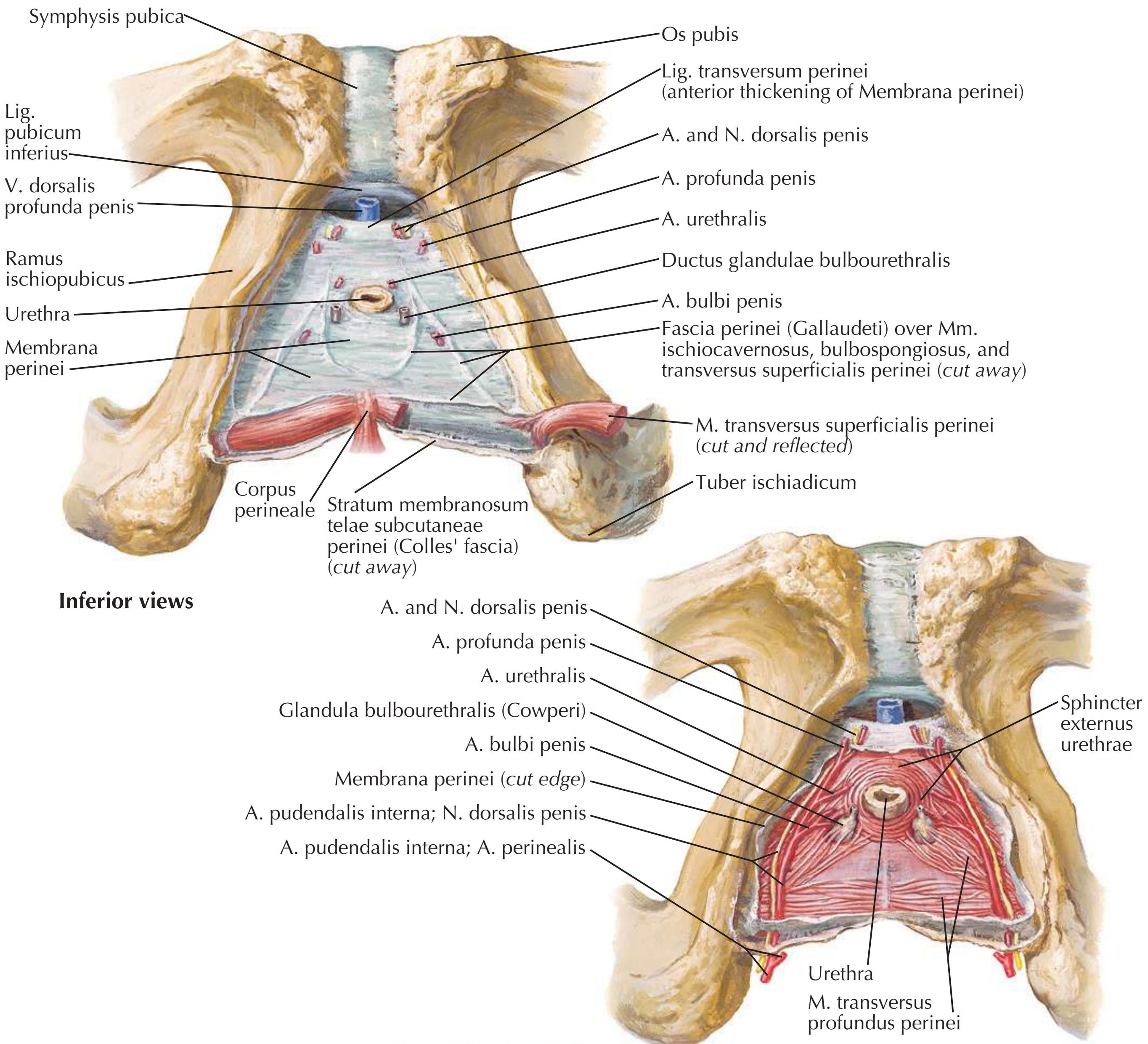

Cutis penis
V. dorsalis profunda penis
Tela subcutanea penis (Dartos fascia)
Fascia penis (Buck's fascia)
Septum intercavernosum fasciae penis
Urethra
V. dorsalis superficialis penis
A. and N. dorsalis penis
V. lateralis superficialis
Corpus cavernosum; Tunica albuginea corporis cavernosi
A. prounda penis
Corpus spongiosum; Tunica albuginea corporis spongiosi
F. Netter M.D.

Transverse section through body of penis

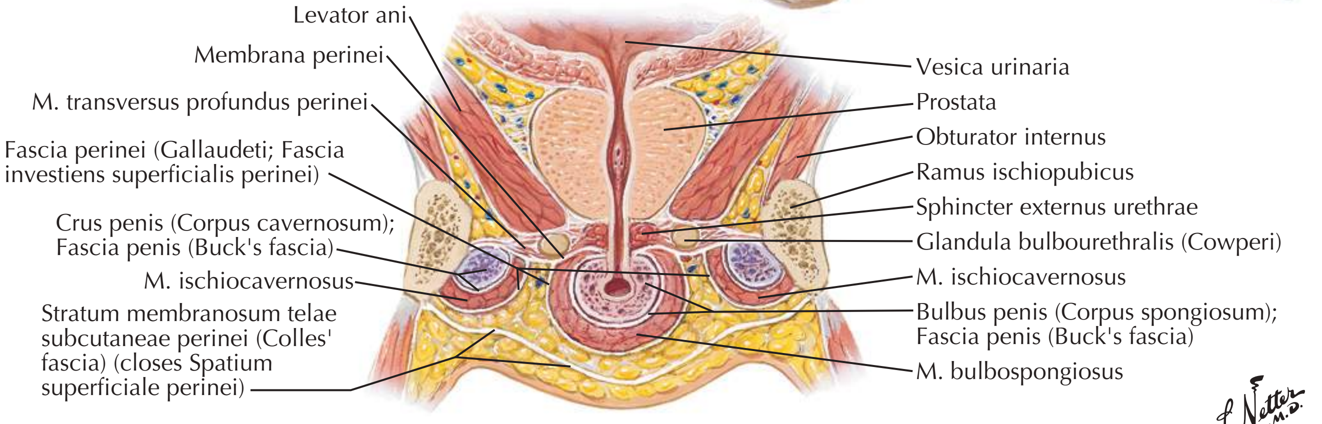
Penis


Ostium externum urethrae
Glans penis
Corona glandis
Collum glandis
Frenulum preputii
Cutis penis
Ostium ductus glandulae preputialis
Tela subcutanea penis (Dartos fascia)
Fascia penis (Buck's fascia)
Fascia spermatica externa (investing Funiculus spermaticus) (*cut*)
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut away to open Spatium superficiale perinei*)
Ramus ischiopubicus
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei) (*cut away*) over muscles of Spatium superficiale perinei
M. ischiocavernosus (*cut away*)
M. transversus superficialis perinei
Anus
Tuber ischiadicum
Membrana perinei
M. gluteus maximus
Corpus perineale
Levator ani; Fascia inferior diaphragmatis pelvis (roof of Fossa ischioanalis)
Apex ossis coccygis
Corpus (Lig.) anococcygeum
Sphincter externus ani


Glans penis
Corpora cavernosa penis
Septum intercavernosum fasciae penis
Corpus spongiosum penis
Tuberculum pubicum
Ramus superior ossis pubis
Ramus ischiopubicus
Bulbus penis
Crus penis
Membrana perinei
Tuber ischiadicum
Corpus perineale
Sphincter externus ani


Symphysis pubica
Lig. pubicum inferius
V. dorsalis profunda penis
Ramus ischiopubicus
Urethra
Membrana perinei
Corpus perineale
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut away*)
Os pubis
Lig. transversum perinei (anterior thickening of Membrana perinei)
A. and N. dorsalis penis
A. profunda penis
A. urethralis
Ductus glandulae bulbourethralis
A. bulbi penis
Fascia perinei (Gallaudeti) over Mm. ischiocavernosus, bulbospongiosus, and transversus superficialis perinei (*cut away*)
M. transversus superficialis perinei (*cut and reflected*)
Tuber ischiadicum
A. and N. dorsalis penis
A. profunda penis
A. urethralis
Glandula bulbourethralis (Cowperi)
A. bulbi penis
Membrana perinei (*cut edge*)
A. pudendalis interna; N. dorsalis penis
A. pudendalis interna; A. perinealis
Sphincter externus urethrae
Urethra
M. transversus profundus perinei

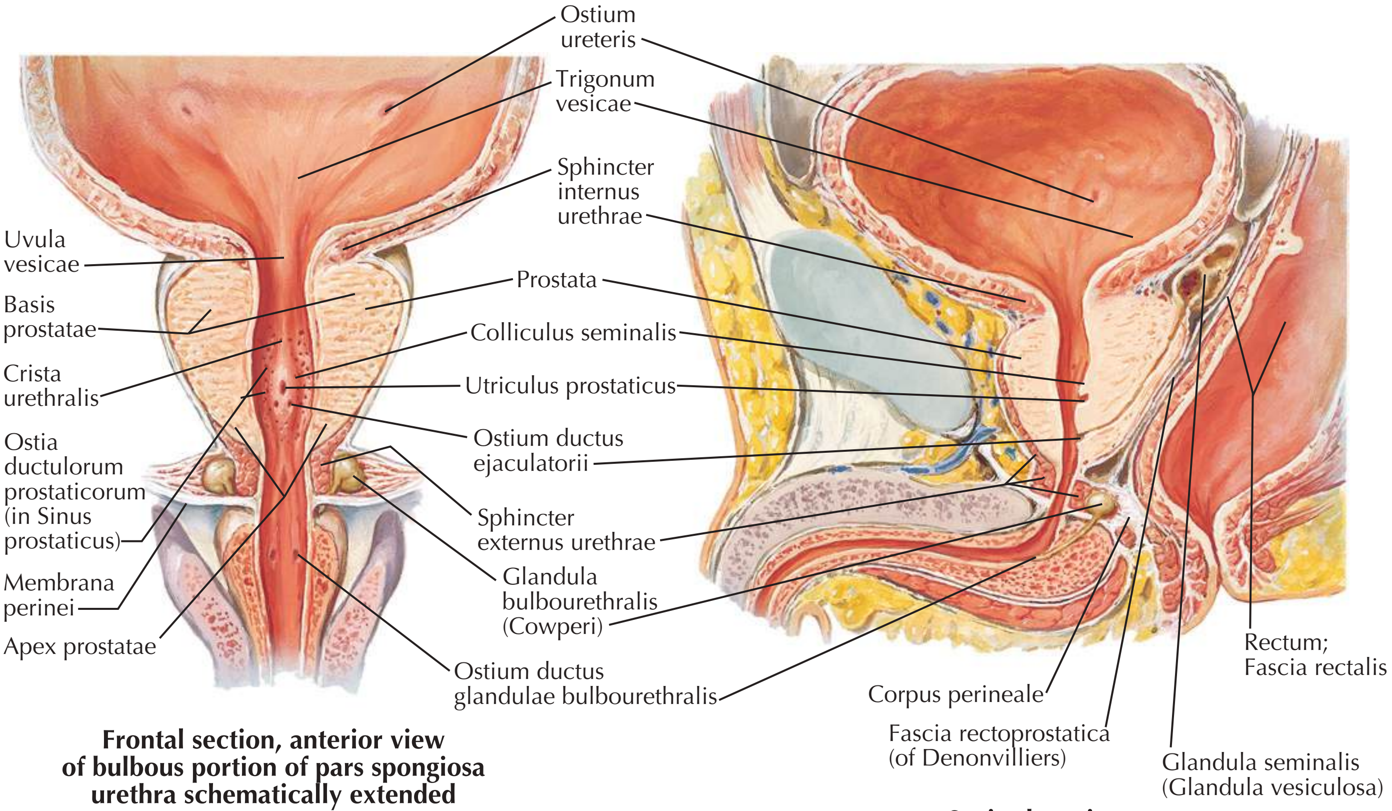
Inferior views


Levator ani
Membrana perinei
M. transversus profundus perinei
Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Crus penis (Corpus cavernosum); Fascia penis (Buck's fascia)
M. ischiocavernosus
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (closes Spatium superficiale perinei)
Vesica urinaria
Prostata
Obturator internus
Ramus ischiopubicus
Sphincter externus urethrae
Glandula bulbourethralis (Cowperi)
M. ischiocavernosus
Bulbus penis (Corpus spongiosum); Fascia penis (Buck's fascia)
M. bulbospongiosus

Frontal section, anterior view of perineum: schema

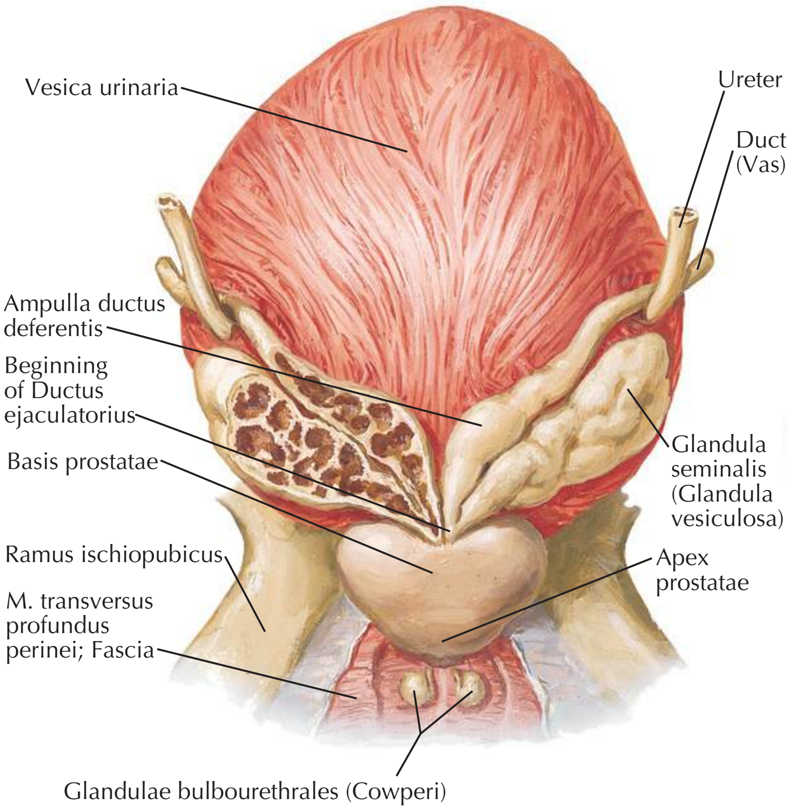
Prostate and Seminal Gland

See also Plates 349, 352, 385

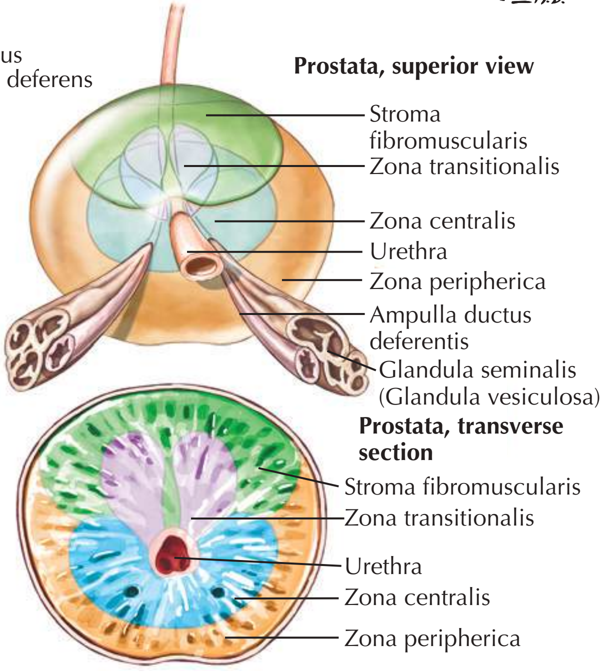

Ostium ureteris
Trigonum vesicae
Sphincter internus urethrae
Uvula vesicae
Basis prostatae
Prostata
Colliculus seminalis
Crista urethralis
Utriculus prostaticus
Ostia ductulorum prostaticorum (in Sinus prostaticus)
Ostium ductus ejaculatorii
Sphincter externus urethrae
Membrana perinei
Glandula bulbourethralis (Cowperi)
Apex prostatae
Ostium ductus glandulae bulbourethralis
Rectum; Fascia rectalis
Corpus perineale
Fascia rectoprostatica (of Denonvilliers)
Glandula seminalis (Glandula vesiculosa)

Frontal section, anterior view of bulbous portion of pars spongiosa urethra schematically extended

Sagittal section


Vesica urinaria
Ureter
Ductus (Vas) deferens
Ampulla ductus deferentis
Beginning of Ductus ejaculatorius
Basis prostatae
Glandula seminalis (Glandula vesiculosa)
Ramus ischiopubicus
Apex prostatae
M. transversus profundus perinei; Fascia
Glandulae bulbourethrales (Cowperi)

Posterior view

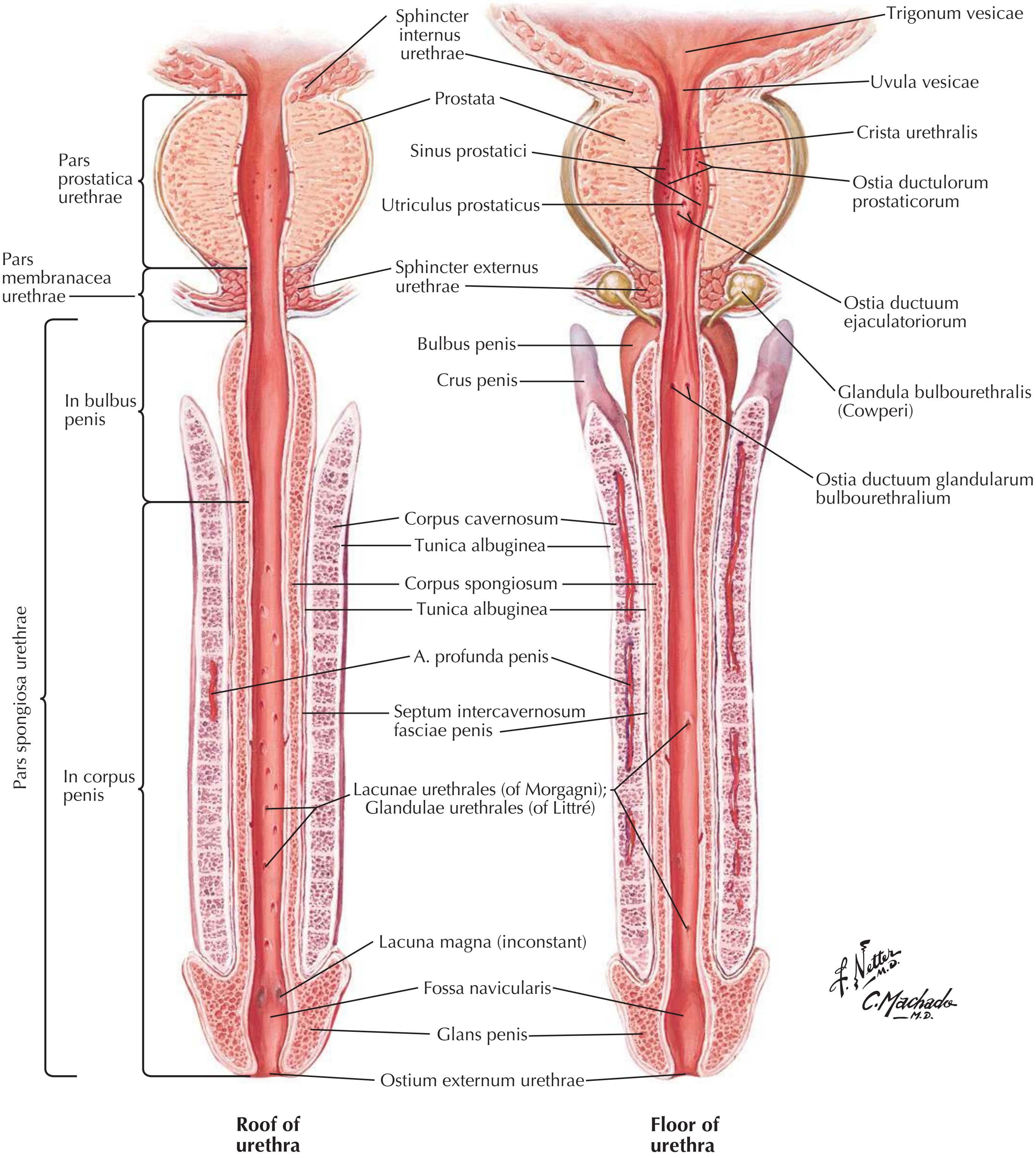

Prostata, superior view

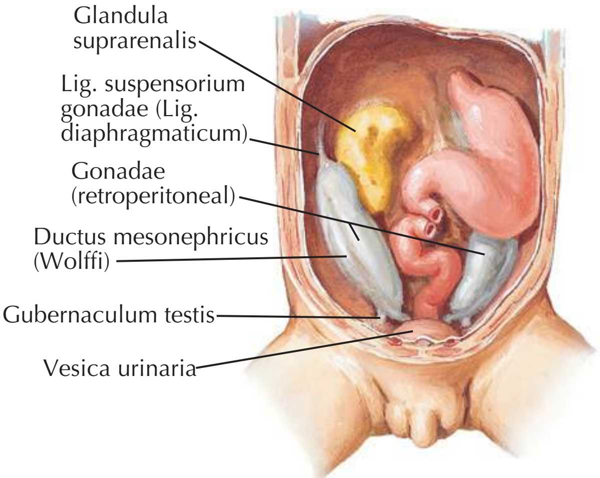
Stroma fibromuscularis
Zona transitionalis
Zona centralis
Urethra
Zona peripherica
Ampulla ductus deferentis
Glandula seminalis (Glandula vesiculosa)

Prostata, transverse section

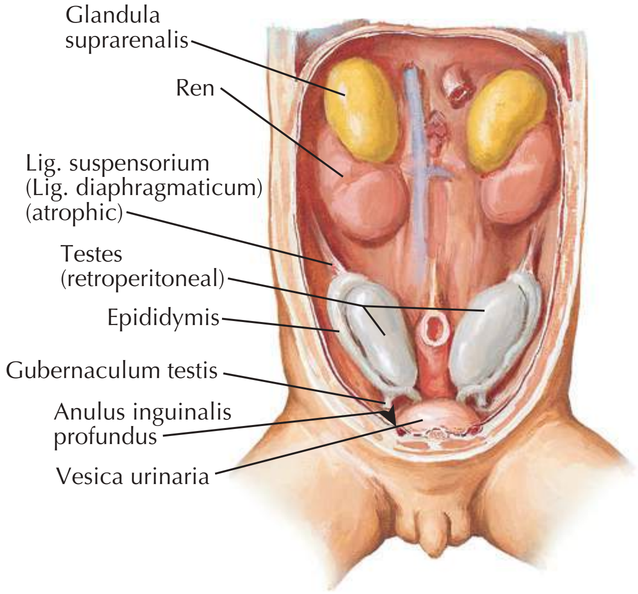
Stroma fibromuscularis
Zona transitionalis
Urethra
Zona centralis
Zona peripherica

Posterior view

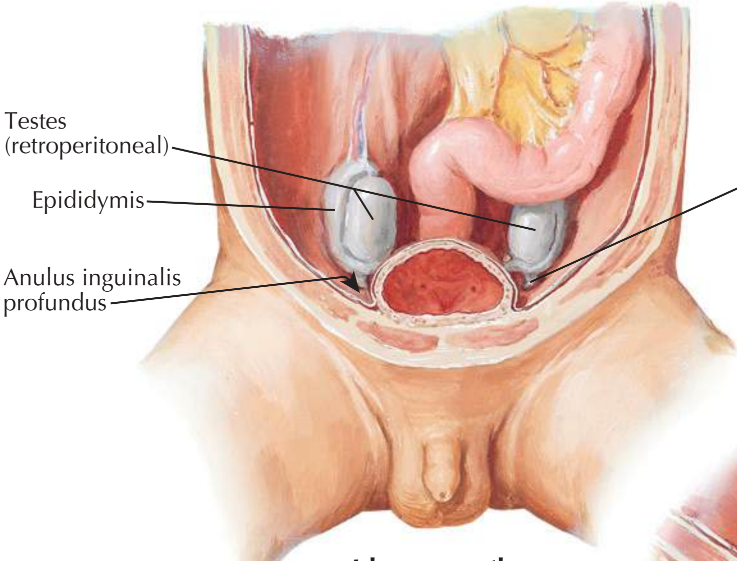

Sphincter internus urethrae
Trigonum vesicae
Uvula vesicae
Prostata
Crista urethralis
Sinus prostatici
Ostia ductulorum prostaticorum
Pars prostatica urethrae
Utriculus prostaticus
Pars membranacea urethrae
Sphincter externus urethrae
Ostia ductuum ejaculatoriorum
Bulbus penis
Crus penis
Glandula bulbourethralis (Cowperi)
In bulbus penis
Ostia ductuum glandularum bulbourethralium
Corpus cavernosum
Tunica albuginea
Corpus spongiosum
Tunica albuginea
Pars spongiosa urethrae
A. profunda penis
Septum intercavernosum fasciae penis
In corpus penis
Lacunae urethrales (of Morgagni); Glandulae urethrales (of Littré)
Lacuna magna (inconstant)
Fossa navicularis
Glans penis
Ostium externum urethrae
F. Netter M.D.
C. Machado M.D.
Roof of urethra
Floor of urethra


Glandula suprarenalis
Lig. suspensorium gonadae (Lig. diaphragmaticum)
Gonadae (retroperitoneal)
Ductus mesonephricus (Wolffi)
Gubernaculum testis
Vesica urinaria

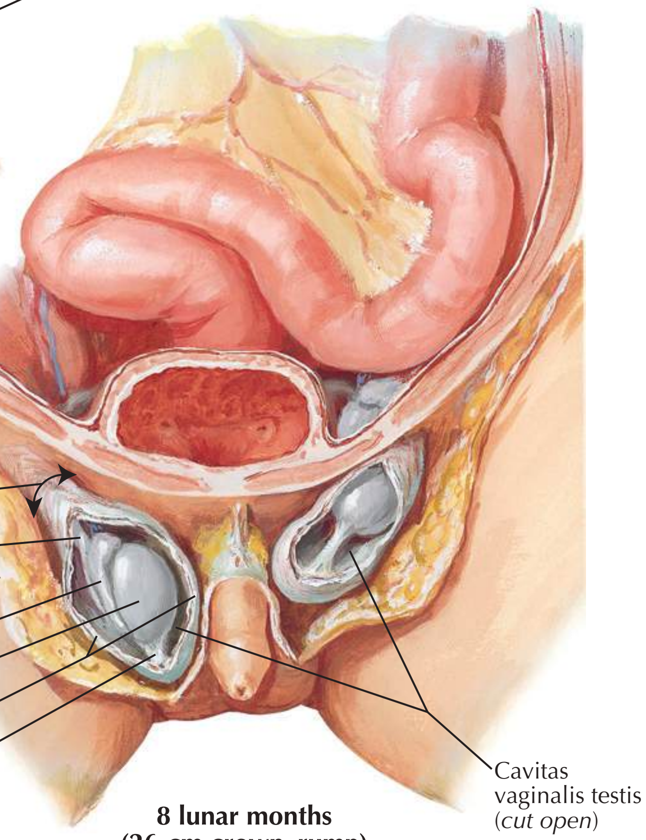
8 weeks
(22.5-mm crown–rump)


Glandula suprarenalis
Ren
Lig. suspensorium (Lig. diaphragmaticum) (atrophic)
Testes (retroperitoneal)
Epididymis
Gubernaculum testis
Anulus inguinalis profundus
Vesica urinaria

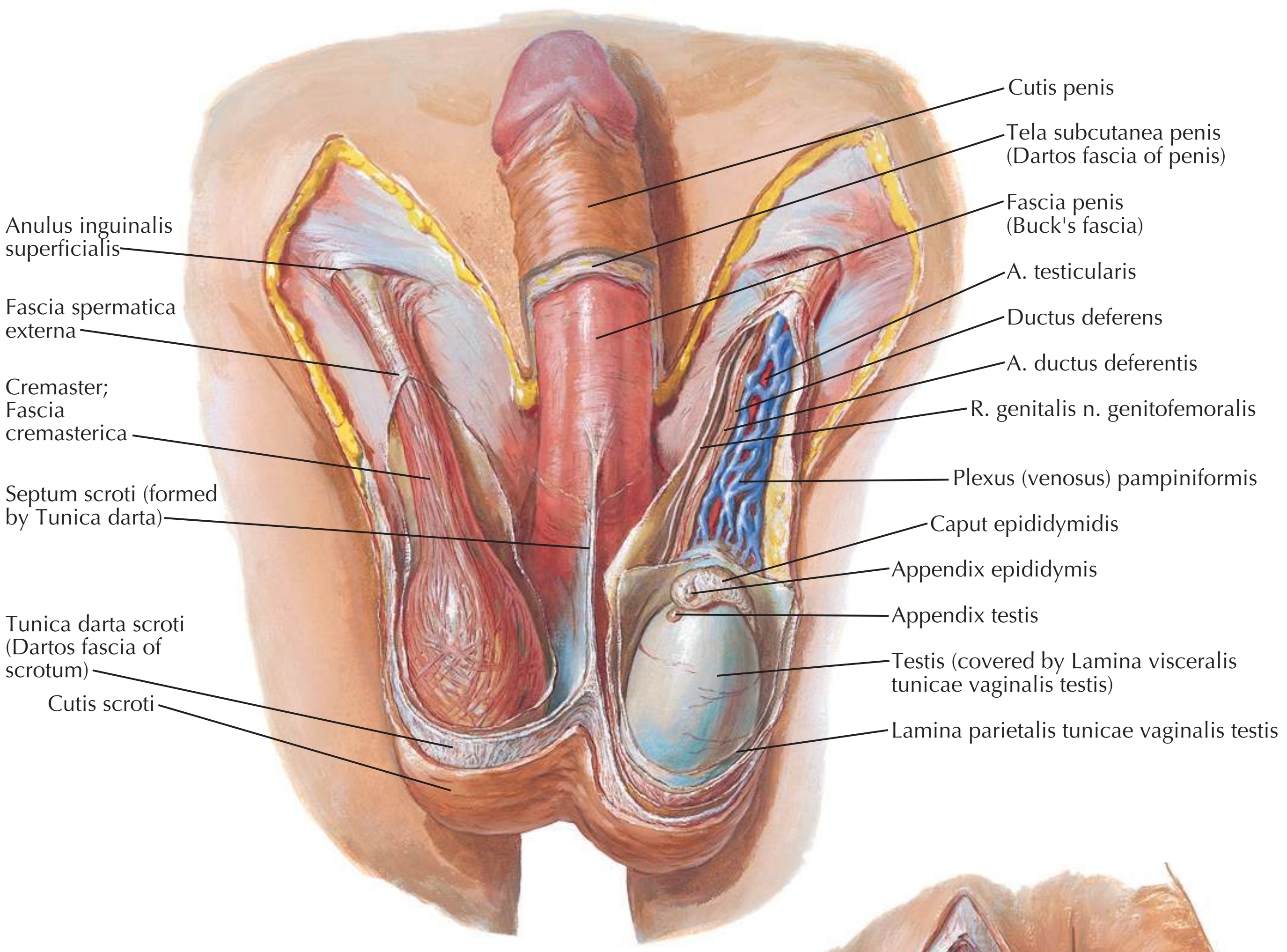
11 weeks
(43-mm crown–rump)

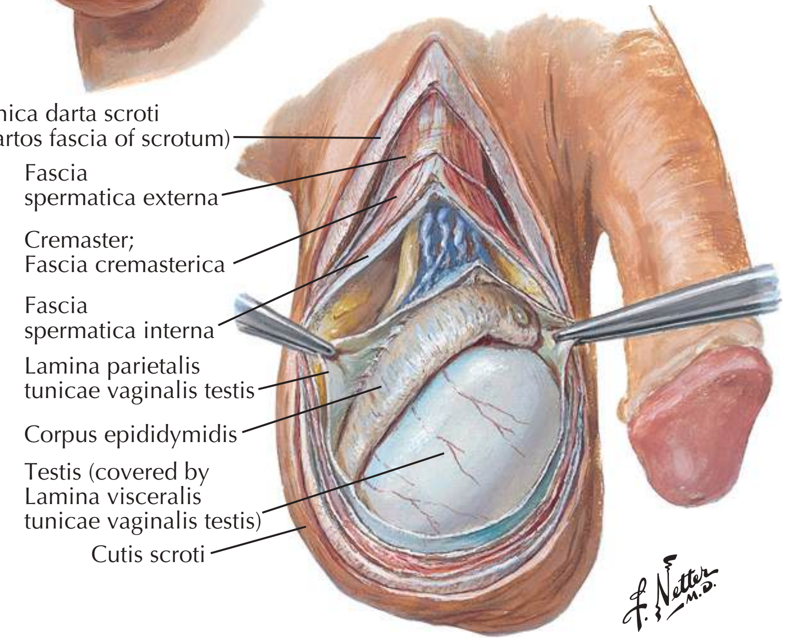

Testes (retroperitoneal)
Epididymis
Anulus inguinalis profundus
Gubernaculum

4 lunar months
(107-mm crown–rump)

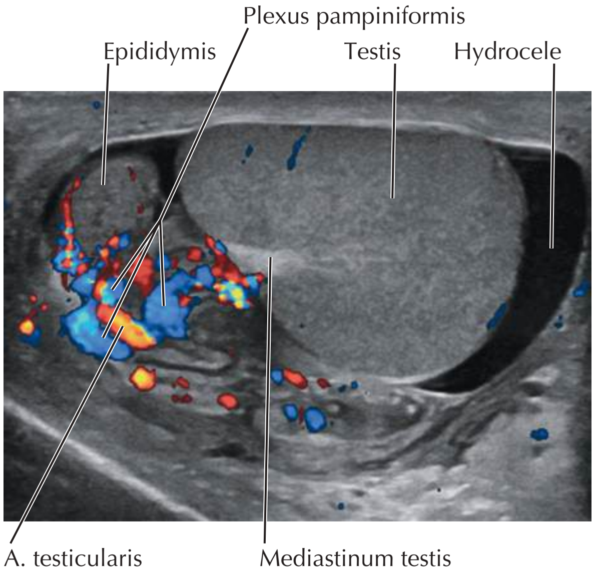

Anulus inguinalis superficialis
Ductus (Vas) deferens
Scrotum (cut open)
Epididymis
Testis
Proc. vaginalis
Gubernaculum testis
Cavitas vaginalis testis (cut open)

8 lunar months
(26-cm crown–rump)


Cutis penis
Tela subcutanea penis (Dartos fascia of penis)
Fascia penis (Buck's fascia)
A. testicularis
Ductus deferens
A. ductus deferentis
R. genitalis n. genitofemoralis
Plexus (venosus) pampiniformis
Caput epididymidis
Appendix epididymis
Appendix testis
Testis (covered by Lamina visceralis tunicae vaginalis testis)
Lamina parietalis tunicae vaginalis testis
Anulus inguinalis superficialis
Fascia spermatica externa
Cremaster; Fascia cremasterica
Septum scroti (formed by Tunica darta)
Tunica darta scroti (Dartos fascia of scrotum)
Cutis scroti

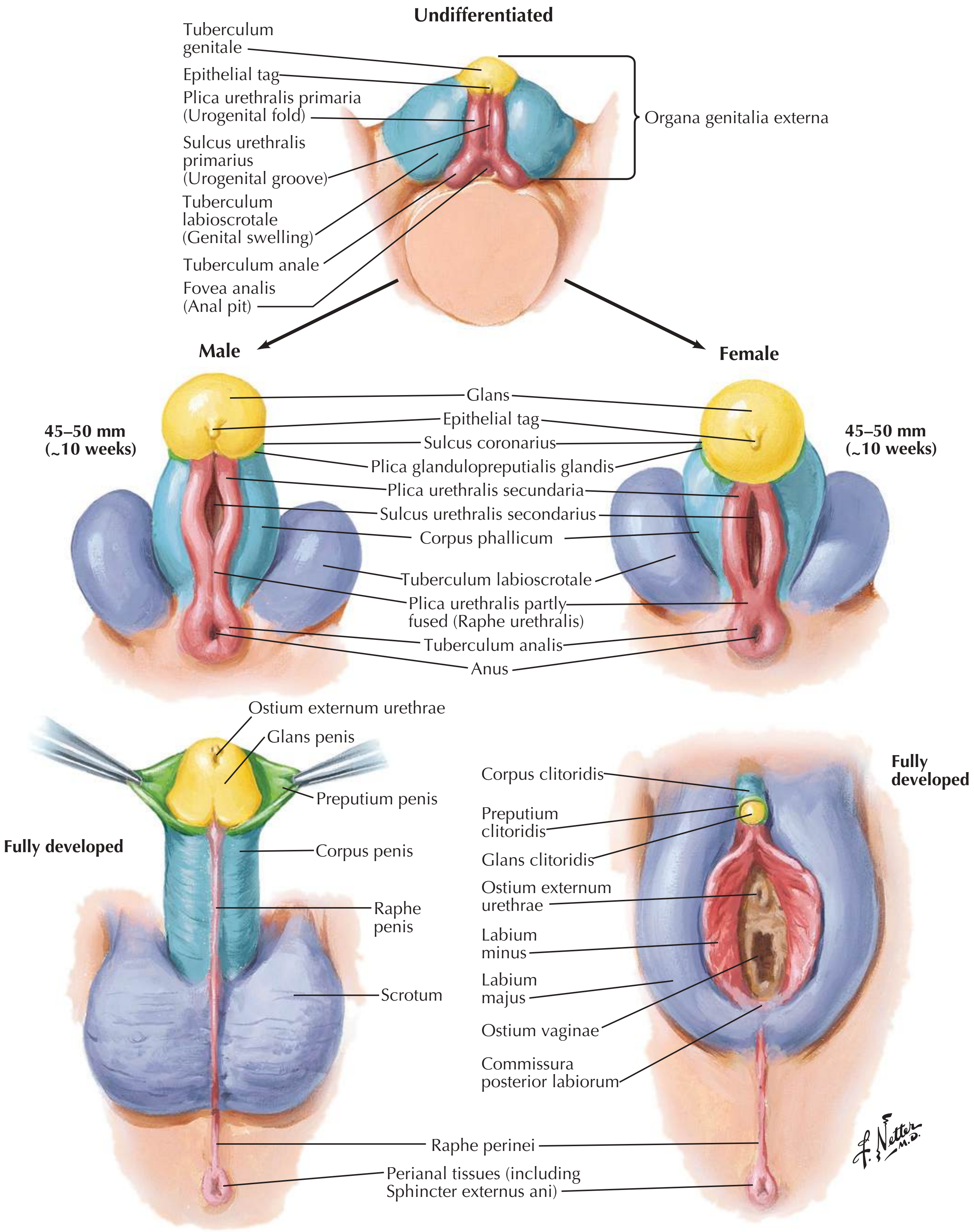

Tunica darta scroti (Dartos fascia of scrotum)
Fascia spermatica externa
Cremaster; Fascia cremasterica
Fascia spermatica interna
Lamina parietalis tunicae vaginalis testis
Corpus epididymidis
Testis (covered by Lamina visceralis tunicae vaginalis testis)
Cutis scroti
F. Netter M.D.

Color Doppler ultrasound: transverse view of testis

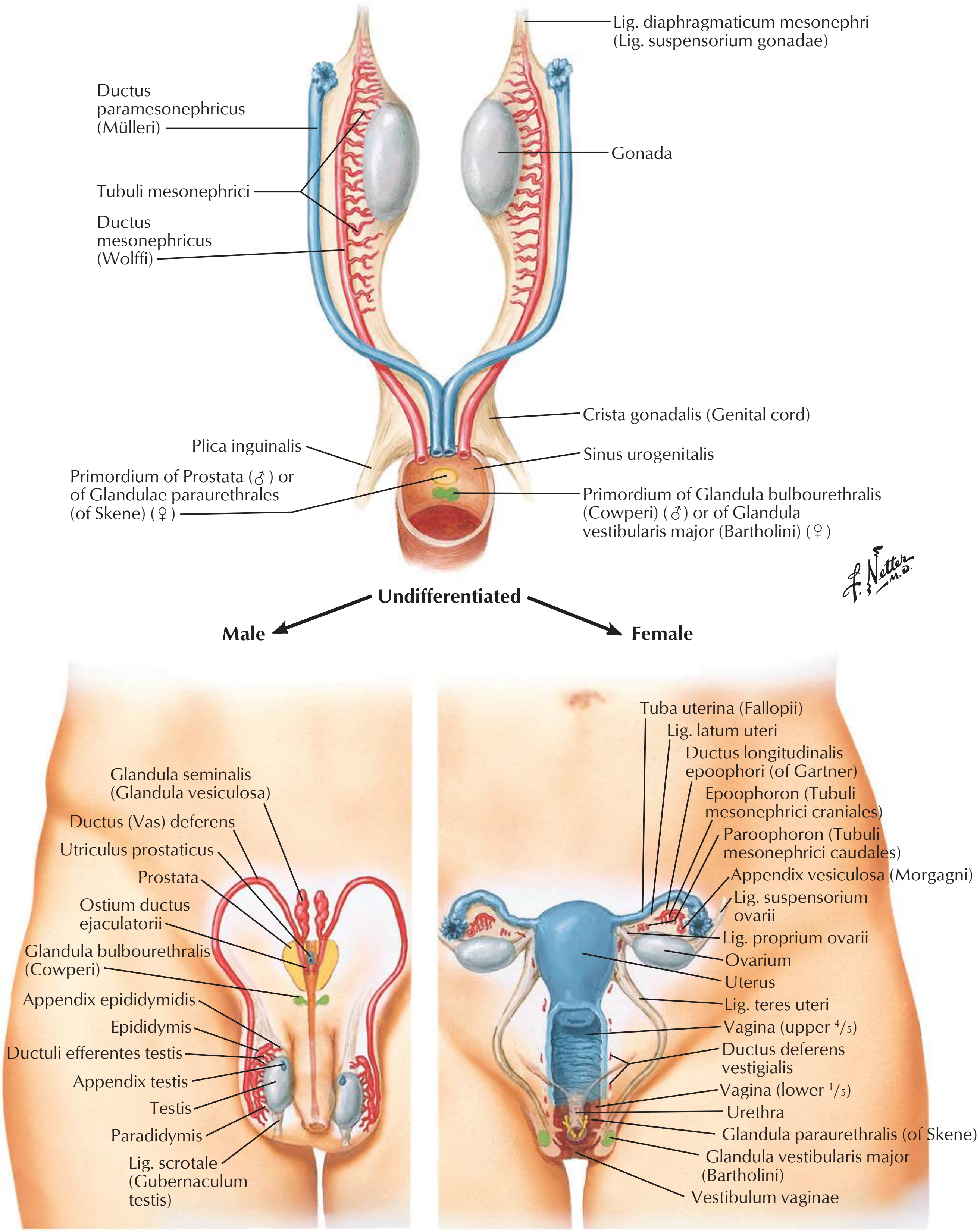

Plexus pampiniformis
Epididymis
Testis
Hydrocele
A. testicularis
Mediastinum testis

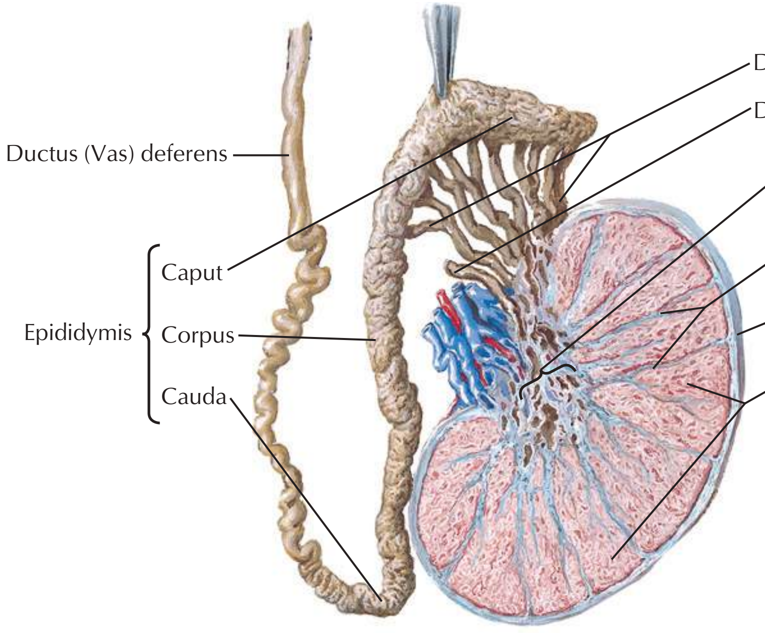
Homologues of External Genitalia

See also Plate 358

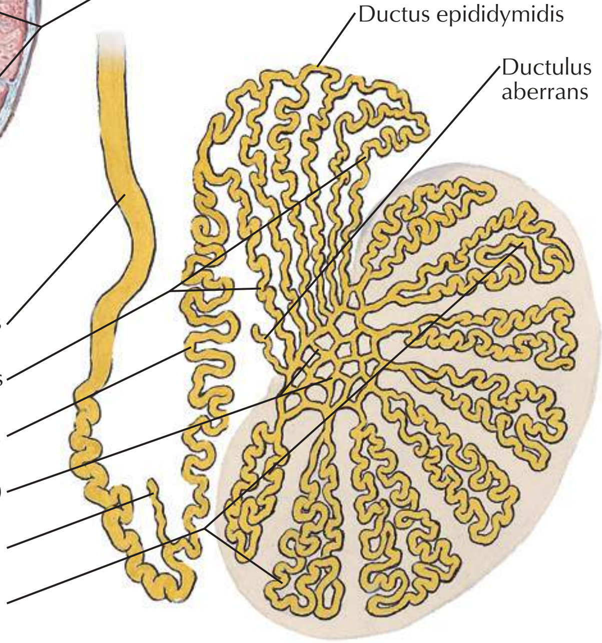

Undifferentiated
Tuberculum genitale
Epithelial tag
Plica urethralis primaria (Urogenital fold)
Sulcus urethralis primarius (Urogenital groove)
Tuberculum labioscrotale (Genital swelling)
Tuberculum anale
Fovea analis (Anal pit)
Organa genitalia externa
Male
Female
45–50 mm (~10 weeks)
45–50 mm (~10 weeks)
Glans
Epithelial tag
Sulcus coronarius
Plica glandulopreputialis glandis
Plica urethralis secundaria
Sulcus urethralis secondarius
Corpus phallicum
Tuberculum labioscrotale
Plica urethralis partly fused (Raphe urethralis)
Tuberculum analis
Anus
Ostium externum urethrae
Glans penis
Preputium penis
Fully developed
Corpus penis
Raphe penis
Scrotum
Corpus clitoridis
Preputium clitoridis
Glans clitoridis
Ostium externum urethrae
Labium minus
Labium majus
Ostium vaginae
Commissura posterior labiorum
Fully developed
Raphe perinei
Perianal tissues (including Sphincter externus ani)
F. Netter M.D.

Homologues of Internal Genitalia

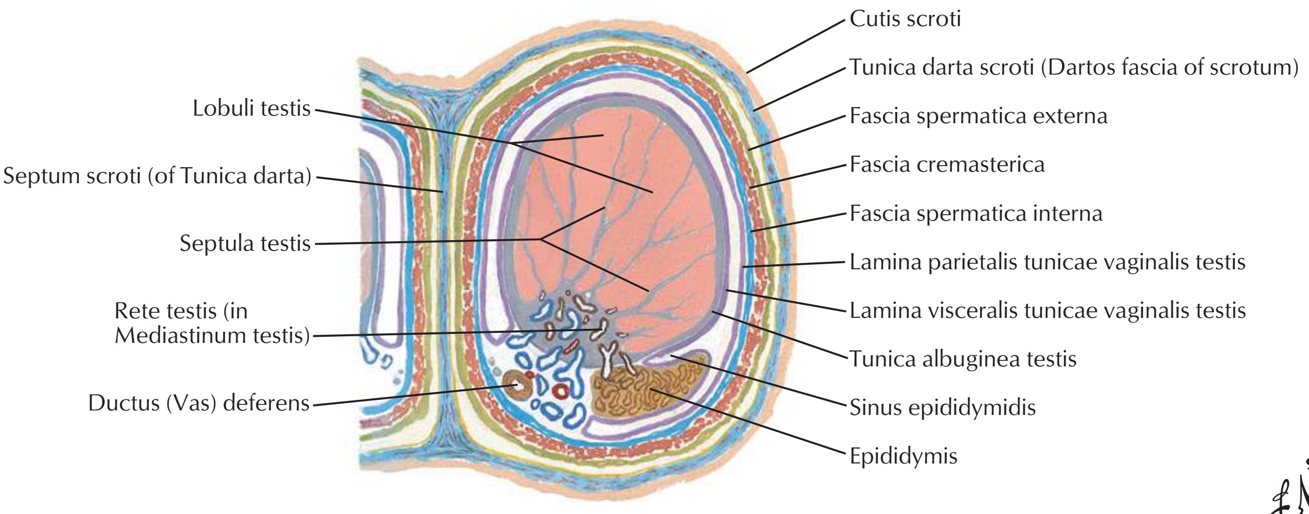

Lig. diaphragmaticum mesonephri (Lig. suspensorium gonadae)
Ductus paramesonephricus (Mülleri)
Gonada
Tubuli mesonephrici
Ductus mesonephricus (Wolffi)
Crista gonadalis (Genital cord)
Plica inguinalis
Sinus urogenitalis
Primordium of Prostata (♂) or of Glandulae paraurethrales (of Skene) (♀)
Primordium of Glandula bulbourethralis (Cowperi) (♂) or of Glandula vestibularis major (Bartholini) (♀)
Undifferentiated
Male
Female
Glandula seminalis (Glandula vesiculosa)
Ductus (Vas) deferens
Utriculus prostaticus
Prostata
Ostium ductus ejaculatorii
Glandula bulbourethralis (Cowperi)
Appendix epididymidis
Epididymis
Ductuli efferentes testis
Appendix testis
Testis
Paradidymis
Lig. scrotale (Gubernaculum testis)
Tuba uterina (Fallopii)
Lig. latum uteri
Ductus longitudinalis epoophori (of Gartner)
Epoophoron (Tubuli mesonephrici craniales)
Paroophoron (Tubuli mesonephrici caudales)
Appendix vesiculosa (Morgagni)
Lig. suspensorium ovarii
Lig. proprium ovarii
Ovarium
Uterus
Lig. teres uteri
Vagina (upper 4/5)
Ductus deferens vestigialis
Vagina (lower 1/5)
Urethra
Glandula paraurethralis (of Skene)
Glandula vestibularis major (Bartholini)
Vestibulum vaginae


Ductuli efferentes testis
Ductulus aberrans (Tubulus mesonephricus vestigialis)
Ductus (Vas) deferens
Rete testis (in Mediastinum testis)
Septula testis
Caput
Tunica albuginea testis
Epididymis
Corpus
Lobuli testis
Cauda

Frontal section

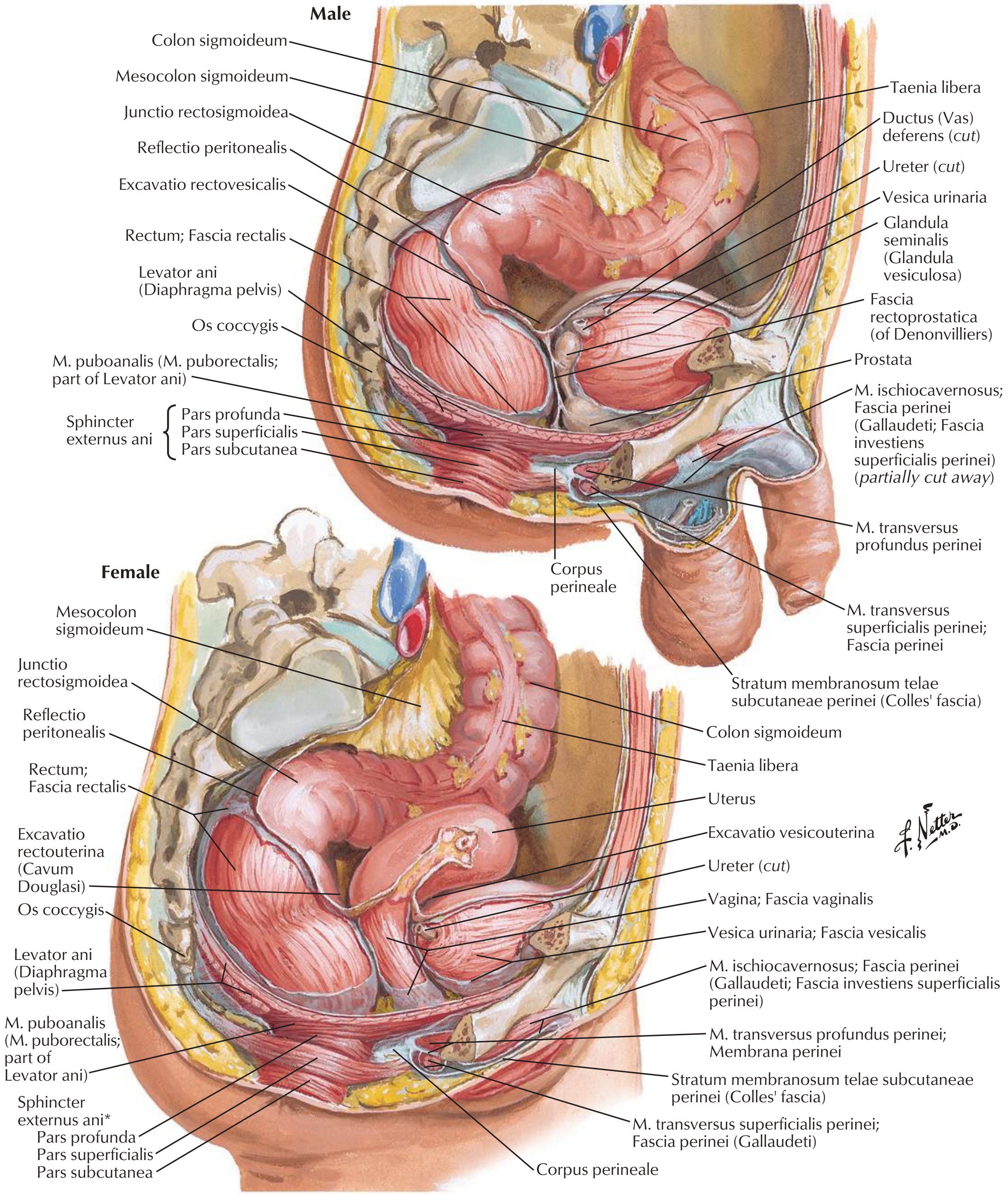

Ductus epididymidis
Ductulus aberrans
Ductus (Vas) deferens
Ductuli efferentes testis
Ductus epididymidis
Rete testis (in Mediastinum testis)
Ductulus aberrans
Tubuli seminiferi contorti

Schema


Cutis scroti
Tunica darta scroti (Dartos fascia of scrotum)
Lobuli testis
Fascia spermatica externa
Septum scroti (of Tunica darta)
Fascia cremasterica
Fascia spermatica interna
Septula testis
Lamina parietalis tunicae vaginalis testis
Lamina visceralis tunicae vaginalis testis
Rete testis (in Mediastinum testis)
Tunica albuginea testis
Sinus epididymidis
Ductus (Vas) deferens
Epididymis

Cross section through scrotum and testis

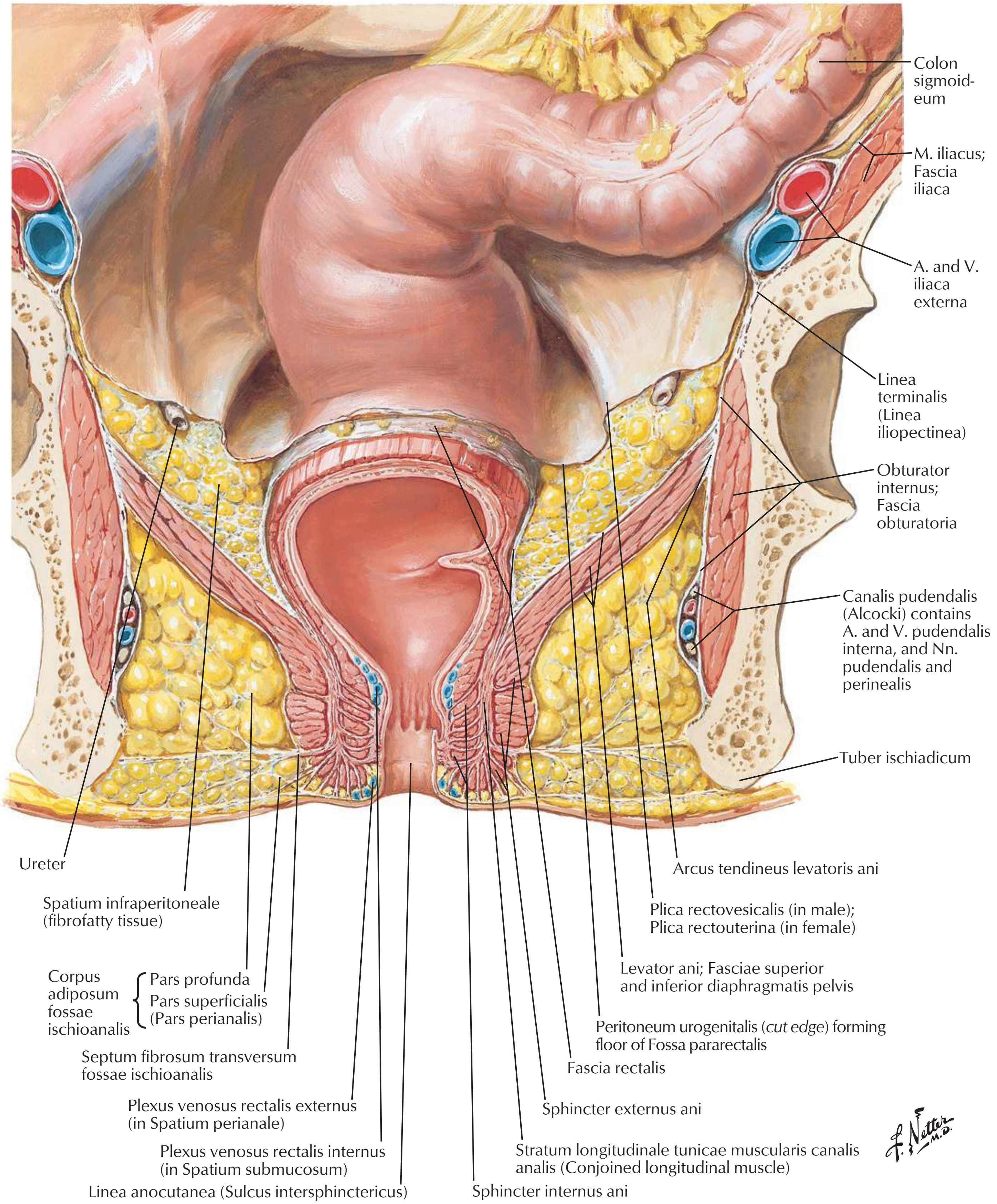
Rectum in Situ: Female and Male


Male
Colon sigmoideum
Mesocolon sigmoideum
Junctio rectosigmoidea
Reflectio peritonealis
Excavatio rectovesicalis
Rectum; Fascia rectalis
Levator ani (Diaphragma pelvis)
Os coccygis
M. puboanalis (M. puborectalis; part of Levator ani)
Sphincter externus ani
Pars profunda
Pars superficialis
Pars subcutanea
Taenia libera
Ductus (Vas) deferens (*cut*)
Ureter (*cut*)
Vesica urinaria
Glandula seminalis (Glandula vesiculosa)
Fascia rectoprostatica (of Denonvilliers)
Prostata
M. ischiocavernosus; Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei) (*partially cut away*)
M. transversus profundus perinei
Corpus perineale
M. transversus superficialis perinei; Fascia perinei
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Female
Mesocolon sigmoideum
Junctio rectosigmoidea
Reflectio peritonealis
Rectum; Fascia rectalis
Excavatio rectouterina (Cavum Douglasi)
Os coccygis
Levator ani (Diaphragma pelvis)
M. puboanalis (M. puborectalis; part of Levator ani)
Sphincter externus ani*
Pars profunda
Pars superficialis
Pars subcutanea
Colon sigmoideum
Taenia libera
Uterus
Excavatio vesicouterina
Ureter (*cut*)
Vagina; Fascia vaginalis
Vesica urinaria; Fascia vesicalis
M. ischiocavernosus; Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
M. transversus profundus perinei; Membrana perinei
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
M. transversus superficialis perinei; Fascia perinei (Gallaudeti)
Corpus perineale
F. Netter M.D.

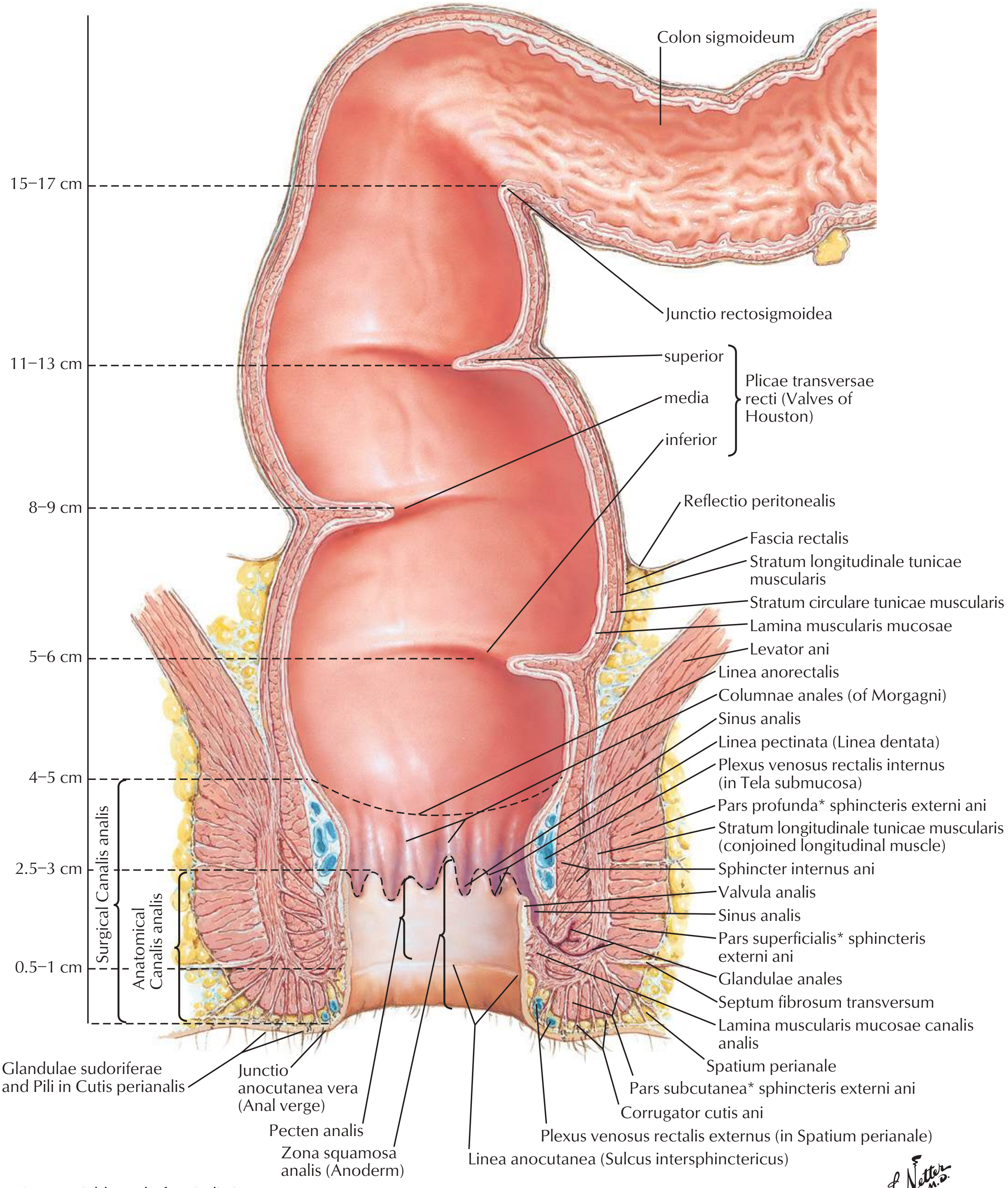
*Parts variable and often indistinct

Ischioanal Fossae

See also **Plate 392**



Colon sigmoideum
M. iliacus; Fascia iliaca
A. and V. iliaca externa
Linea terminalis (Linea iliopectinea)
Obturator internus; Fascia obturatoria
Canalis pudendalis (Alcocki) contains A. and V. pudendalis interna, and Nn. pudendalis and perinealis
Tuber ischiadicum
Arcus tendineus levatoris ani
Plica rectovesicalis (in male); Plica rectouterina (in female)
Levator ani; Fasciae superior and inferior diaphragmatis pelvis
Peritoneum urogenitalis (*cut edge*) forming floor of Fossa pararectalis
Fascia rectalis
Sphincter externus ani
Stratum longitudinale tunicae muscularis canalis analis (Conjoined longitudinal muscle)
Sphincter internus ani
Ureter
Spatium infraperitoneale (fibrofatty tissue)
Corpus adiposum fossae ischioanalis
Pars profunda
Pars superficialis (Pars perianalis)
Septum fibrosum transversum fossae ischioanalis
Plexus venosus rectalis externus (in Spatium perianale)
Plexus venosus rectalis internus (in Spatium submucosum)
Linea anocutanea (Sulcus intersphinctericus)


Colon sigmoideum
15–17 cm
Junctio rectosigmoidea
11–13 cm
superior
media
inferior
Plicae transversae recti (Valves of Houston)
8–9 cm
Reflectio peritonealis
Fascia rectalis
Stratum longitudinale tunicae muscularis
Stratum circulare tunicae muscularis
Lamina muscularis mucosae
Levator ani
5–6 cm
Linea anorectalis
Columnae anales (of Morgagni)
Sinus analis
Linea pectinata (Linea dentata)
Plexus venosus rectalis internus (in Tela submucosa)
4–5 cm
Pars profunda* sphincteris externi ani
Stratum longitudinale tunicae muscularis (conjoined longitudinal muscle)
2.5–3 cm
Sphincter internus ani
Valvula analis
Sinus analis
Pars superficialis* sphincteris externi ani
Surgical Canalis analis
Anatomical Canalis analis
0.5–1 cm
Glandulae anales
Septum fibrosum transversum
Lamina muscularis mucosae canalis analis
Spatium perianale
Pars subcutanea* sphincteris externi ani
Corrugator cutis ani
Plexus venosus rectalis externus (in Spatium perianale)
Linea anocutanea (Sulcus intersphinctericus)
Glandulae sudoriferae and Pili in Cutis perianalis
Junctio anocutanea vera (Anal verge)
Pecten analis
Zona squamosa analis (Anoderm)

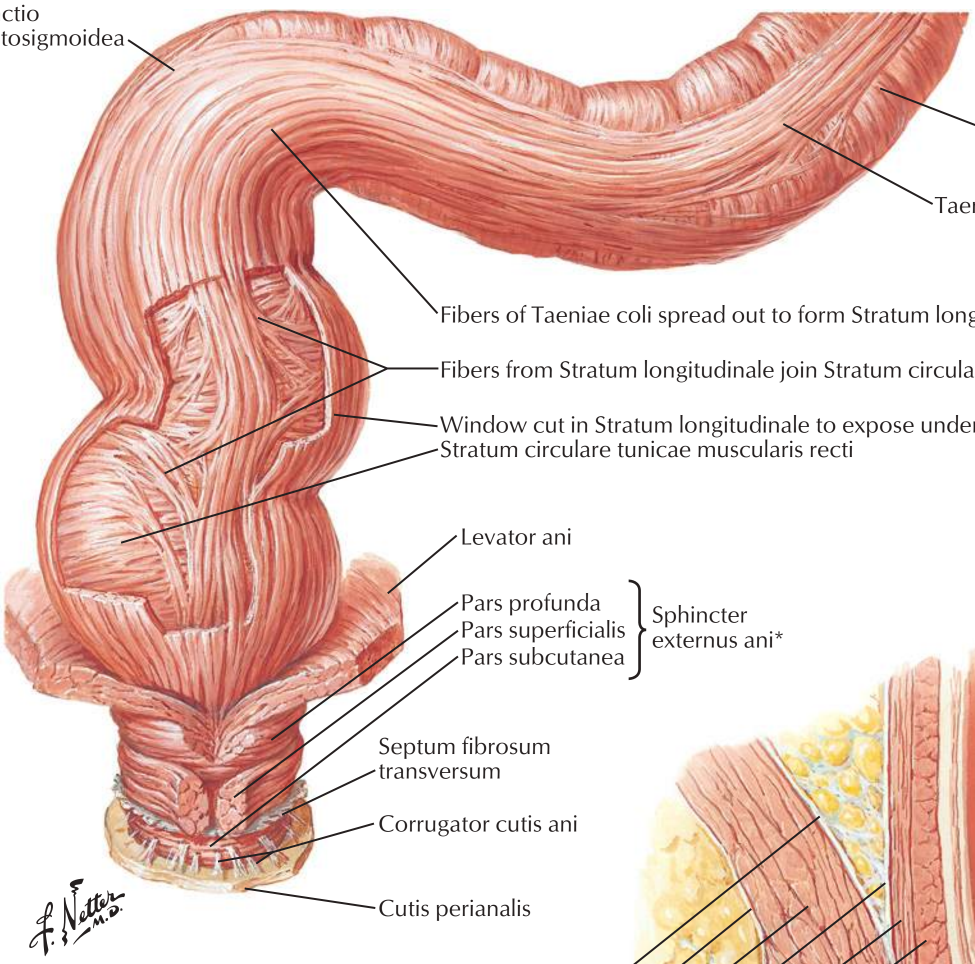
*Parts variable and often indistinct

F. Netter M.D.

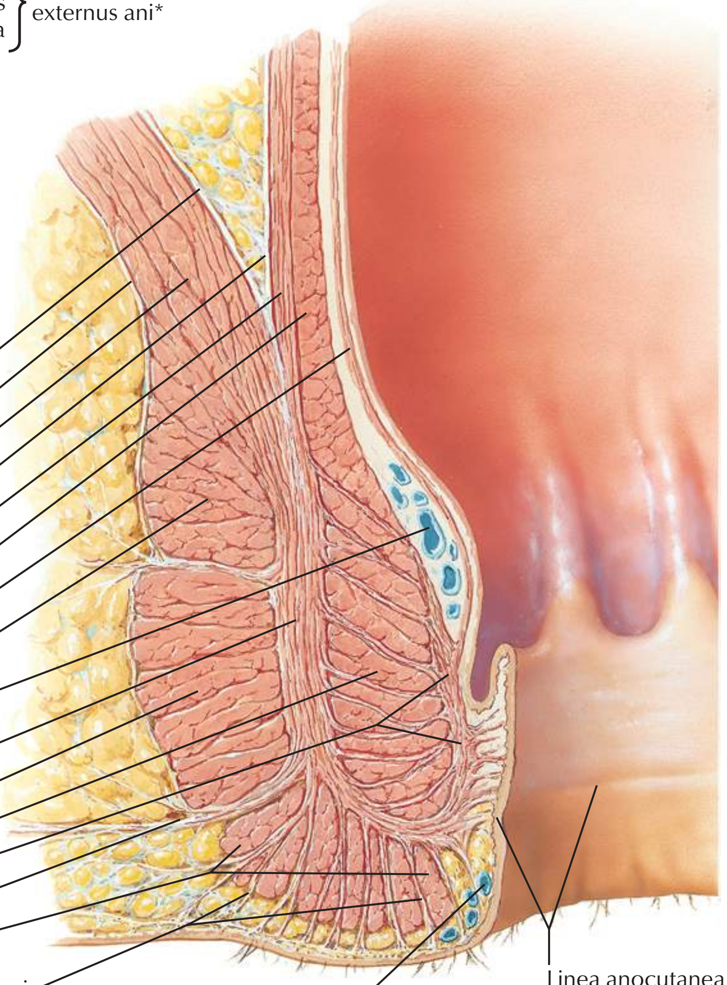
Anorectal Musculature

See also Plate 381

Anterior view


Junctio rectosigmoidea
Colon sigmoideum
Taenia libera
Fibers of Taeniae coli spread out to form Stratum longitudinale tunicae muscularis recti
Fibers from Stratum longitudinale join Stratum circulare
Window cut in Stratum longitudinale to expose underlying Stratum circulare
Stratum circulare tunicae muscularis recti
Levator ani
Pars profunda
Pars superficialis
Pars subcutanea
Sphincter externus ani*
Septum fibrosum transversum
Corrugator cutis ani
Cutis perianalis

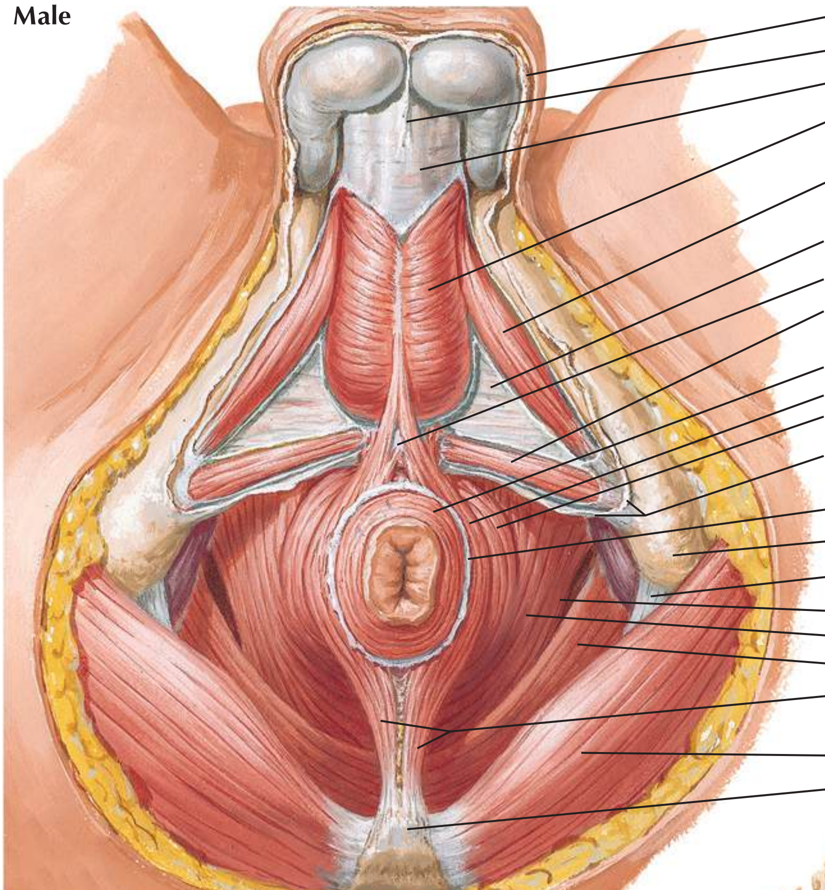
Coronal section


Fascia superior diaphragmatis pelvis
Fascia inferior diaphragmatis pelvis
Levator ani
Fascia rectalis
Stratum longitudinale tunicae muscularis recti
Stratum circulare tunicae muscularis recti
Lamina muscularis mucosae recti
Pars profunda* sphincteris externi ani
Plexus venosus rectalis internus
Stratum longitudinale tunicae muscularis (Conjoined longitudinal muscle)
Pars superficialis* sphincteris externi ani
Sphincter internus ani
Lamina muscularis mucosae canalis analis
Septum fibrosum transversum fossae ischioanalis
Pars subcutanea* sphincteris externi ani
Corrugator cutis ani
Plexus venosus rectalis externus
Linea anocutanea (Sulcus intersphinctericus)

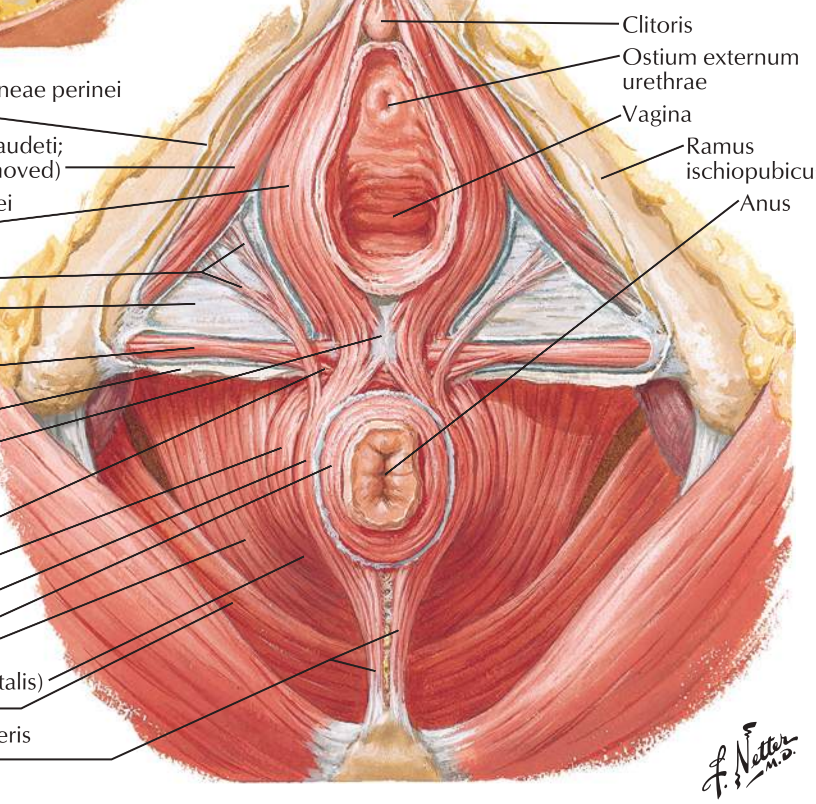
*Parts variable and often indistinct

External Anal Sphincter: Perineal Views

Male


Tunica darta scroti (Dartos fascia of scrotum)
Septum scroti
Fascia penis (Buck's fascia)
M. bulbospongiosus (Fascia perinei [Gallaudeti; Fascia investiens superficialis perinei] removed)
M. ischiocavernosus (Fascia perinei [Gallaudeti] removed)
Membrana perinei
Corpus perineale
M. transversus superficialis perinei (Fascia perinei [Gallaudeti] removed)
Pars subcutanea
Pars superficialis
Pars profunda
Sphincter externus ani*
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut edges*)
Septum fibrosum transversum fossae ischioanalis (*cut*)
Tuber ischiadicum
Lig. sacrotuberale
M. pubococcygeus
M. puboanalis (M. puborectalis)
M. iliococcygeus
Levator ani
Posterior extensions of Pars superficialis sphincteris externi ani (in Corpus [Lig.] anococcygeum)
M. gluteus maximus
Apex ossis coccygis

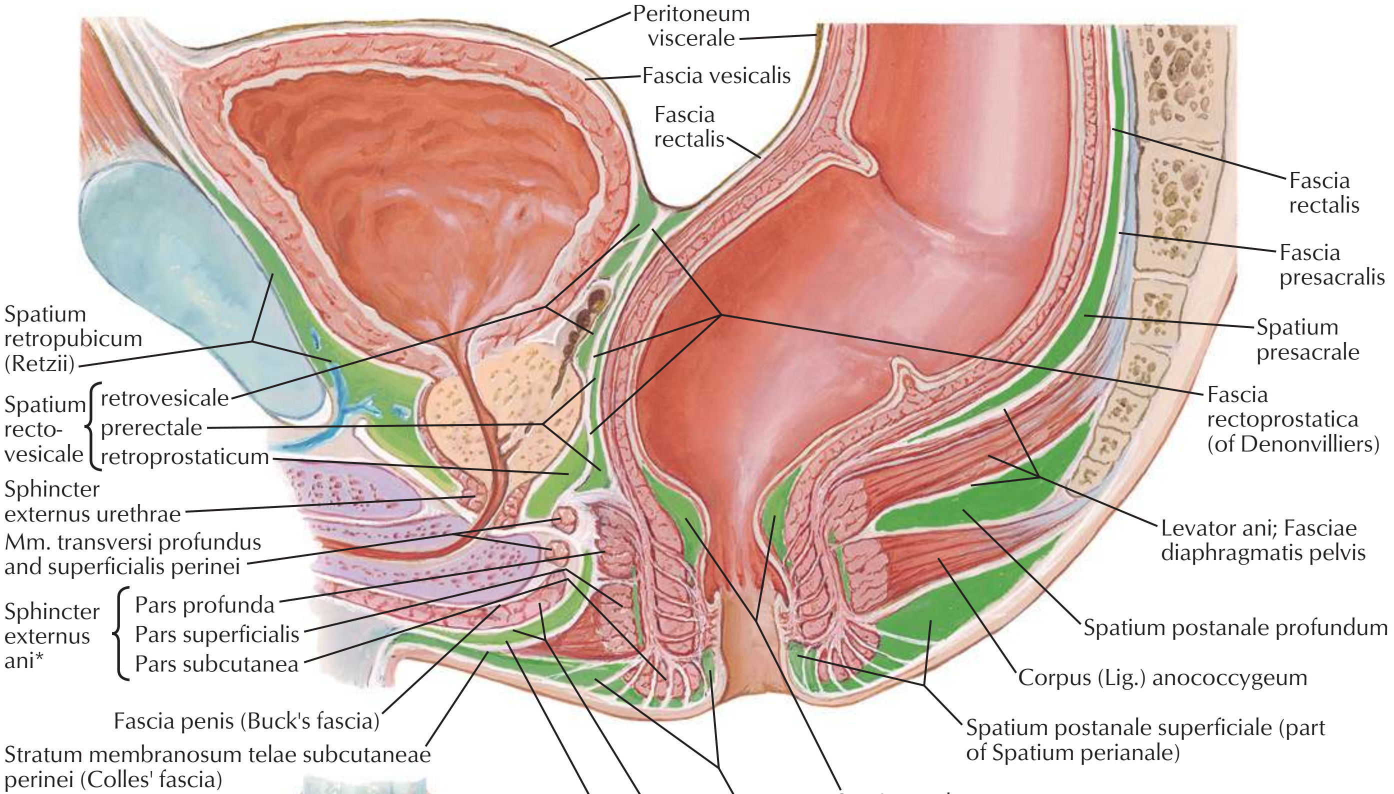
Female


Clitoris
Ostium externum urethrae
Vagina
Ramus ischiopubicus
Anus
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut edge*)
M. ischiocavernosus (Fascia perinei [Gallaudeti; Fascia investiens superficialis perinei] removed)
M. bulbospongiosus (Fascia perinei [Gallaudeti] removed)
Fibers from Pars superficialis sphincteris externi ani to Ramus ischiopubicus
Membrana perinei
M. transversus perinei superficialis (Fascia perinei [Gallaudeti] removed)
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut edge*)
Corpus perineale
Crossed fibers from Partes superficialis and profunda sphincteris externi ani to M. transversus superficialis perinei
Sphincter externus ani*
Pars profunda
Pars superficialis
Pars subcutanea
Levator ani
M. pubococcygeus
M. puboanalis (M. puborectalis)
M. iliococcygeus
Posterior extensions of Pars superficialis sphincteris externi ani (in Corpus [Lig.] anococcygeum)
F. Netter M.D.

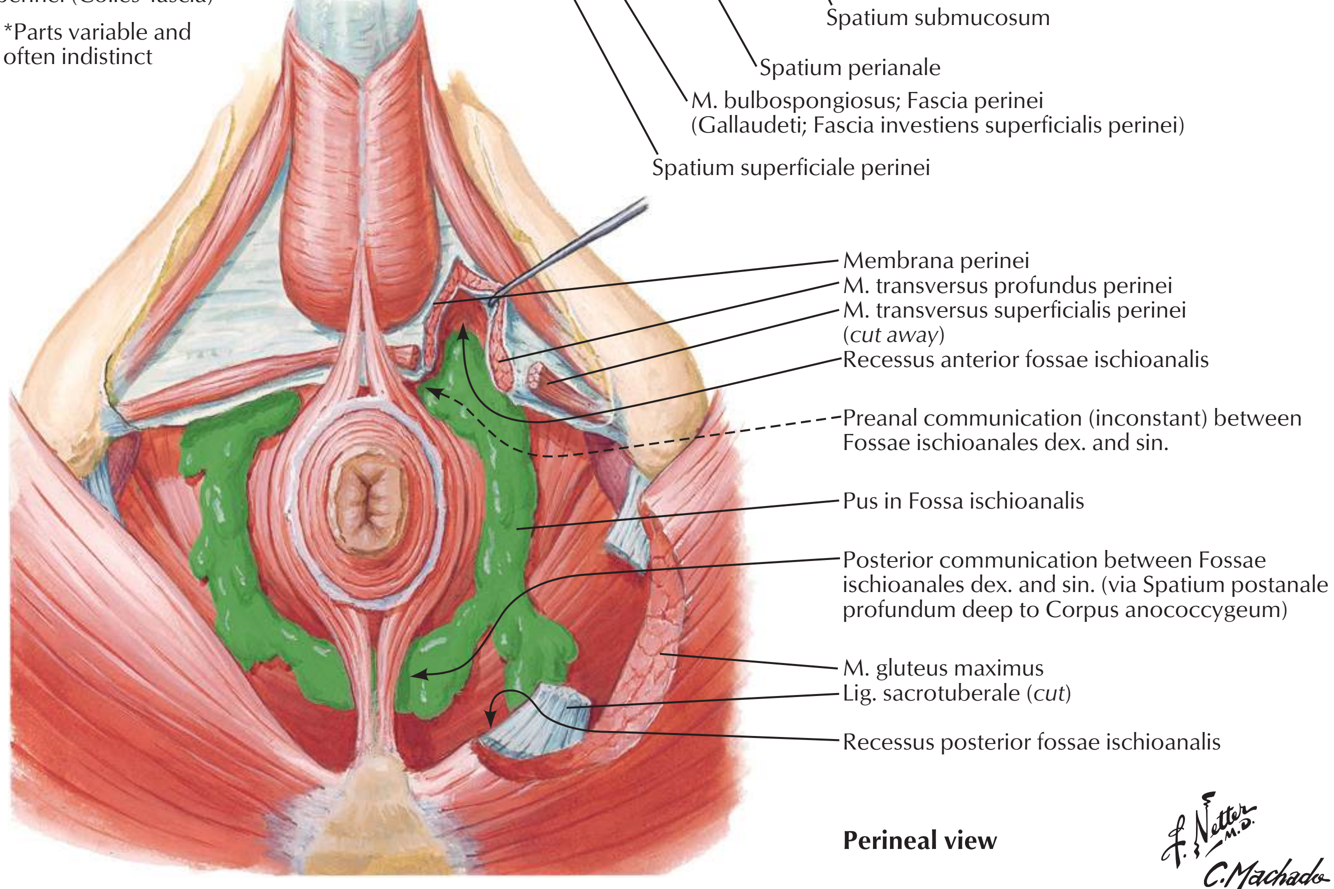
*Parts variable and often indistinct

Actual and Potential Perineopelvic Spaces

Sagittal section


Peritoneum visecerale
Fascia vesicalis
Fascia rectalis
Fascia rectalis
Fascia presacralis
Spatium presacrale
Fascia rectoprostatica (of Denonvilliers)
Levator ani; Fasciae diaphragmatis pelvis
Spatium postanale profundum
Corpus (Lig.) anococcygeum
Spatium postanale superficiale (part of Spatium perianale)
Spatium submucosum
Spatium perianale
M. bulbospongiosus; Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Spatium superficiale perinei
Spatium retropubicum (Retzii)
Spatium recto-vesicale
retrovesicale
prerectale
retroprostaticum
Sphincter externus urethrae
Mm. transversi profundus and superficialis perinei
Sphincter externus ani*
Pars profunda
Pars superficialis
Pars subcutanea
Fascia penis (Buck's fascia)
Stratum membranosum telae subcutaneae perinei (Colles' fascia)

*Parts variable and often indistinct

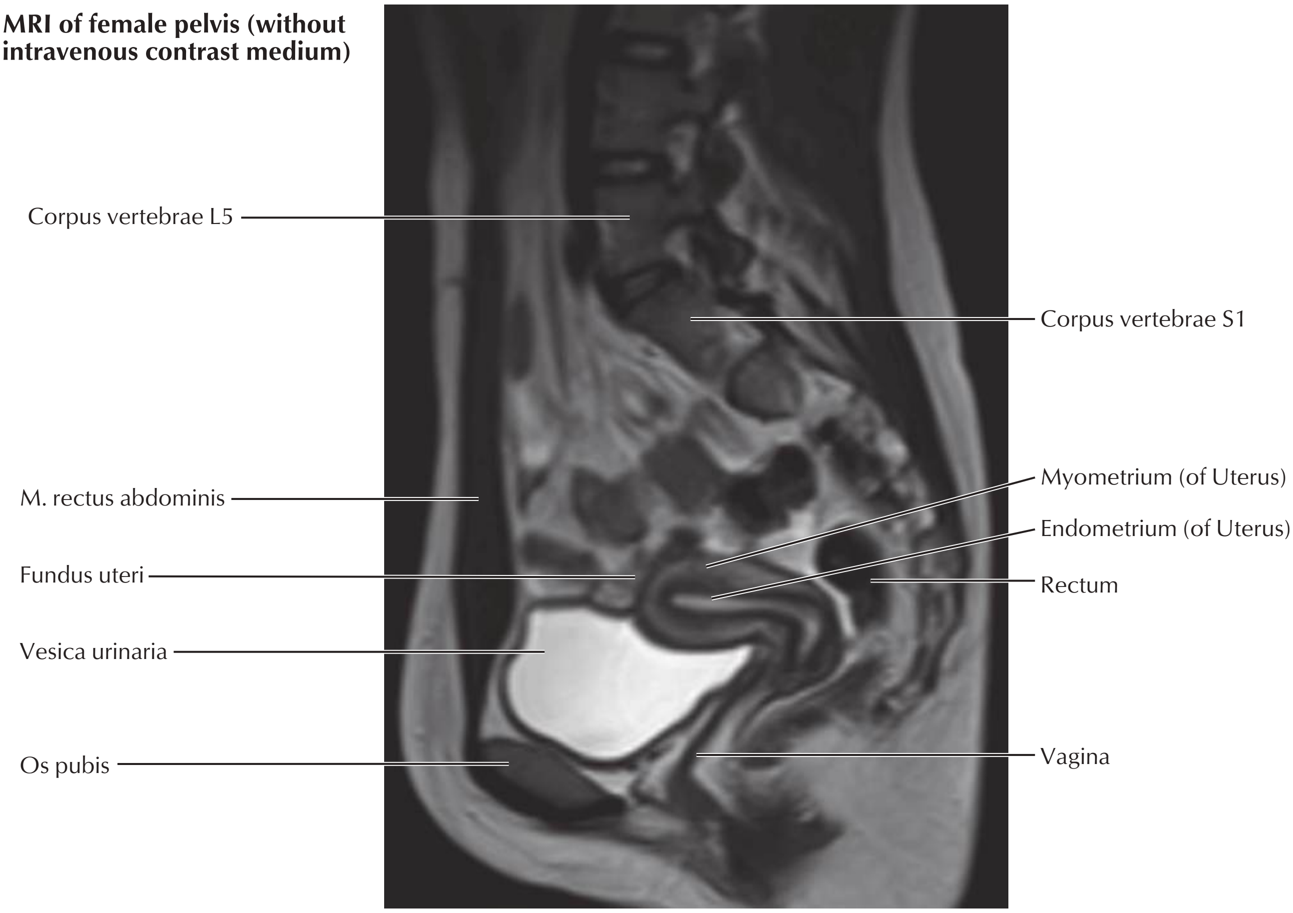

Membrana perinei
M. transversus profundus perinei
M. transversus superficialis perinei (cut away)
Recessus anterior fossae ischioanalis
Preanal communication (inconstant) between Fossae ischioanales dex. and sin.
Pus in Fossa ischioanalis
Posterior communication between Fossae ischioanales dex. and sin. (via Spatium postanale profundum deep to Corpus anococcygeum)
M. gluteus maximus
Lig. sacrotuberale (cut)
Recessus posterior fossae ischioanalis

Perineal view

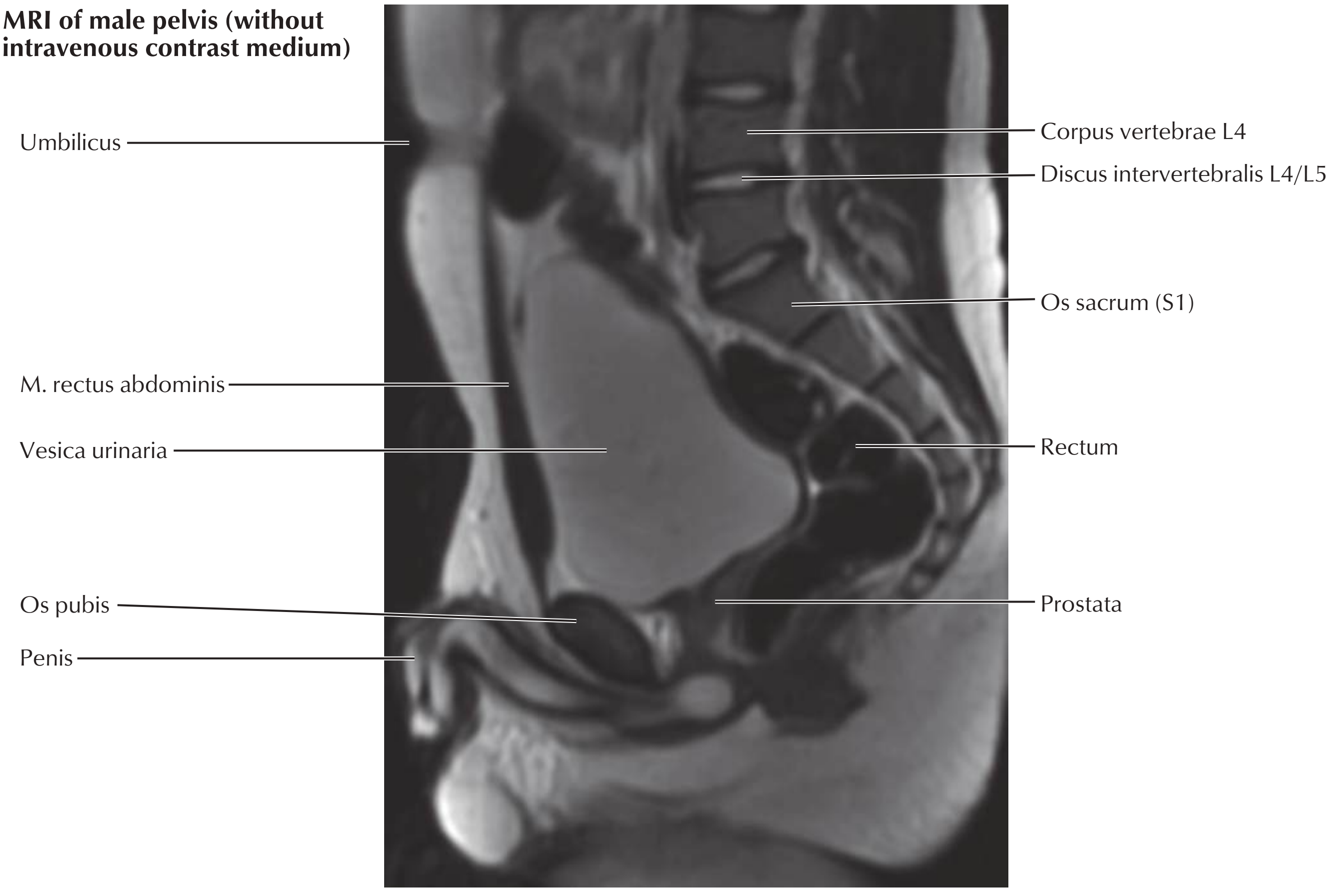
Spread of perineal abscess in perineal spaces

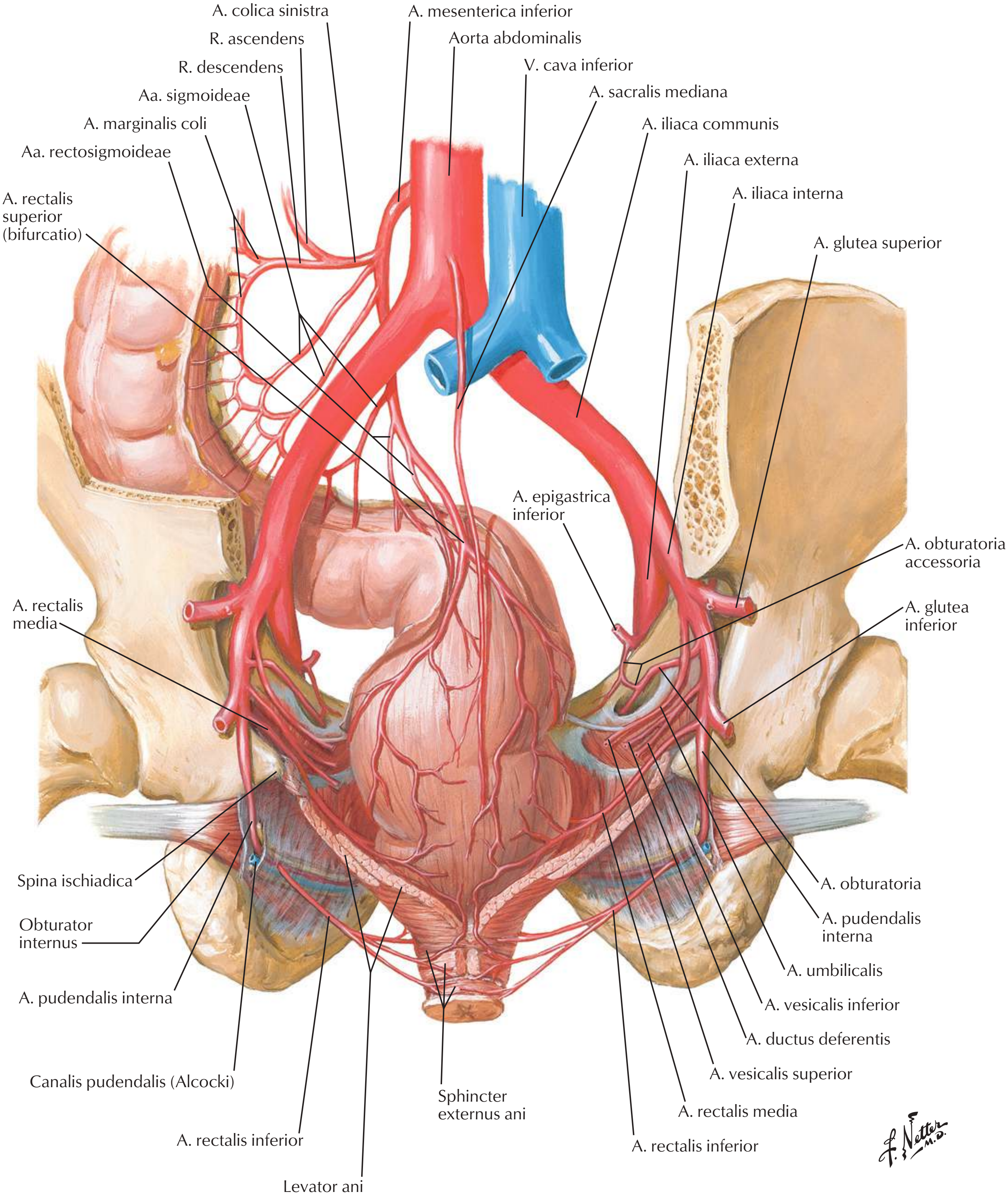
F. Netter M.D.
C. Machado M.D.

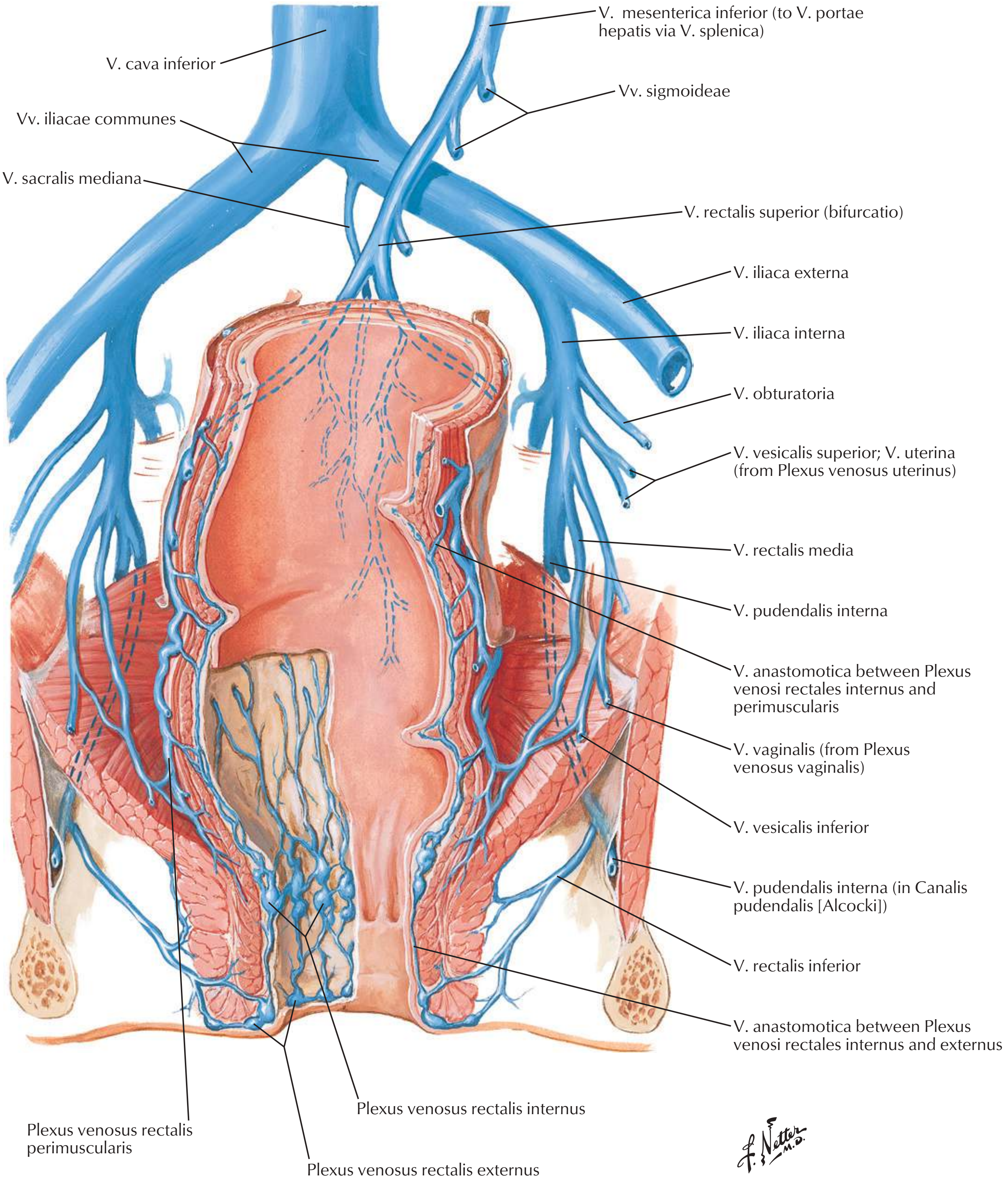
MRI of female pelvis (without intravenous contrast medium)


Corpus vertebrae L5
Corpus vertebrae S1
M. rectus abdominis
Myometrium (of Uterus)
Endometrium (of Uterus)
Fundus uteri
Rectum
Vesica urinaria
Os pubis
Vagina

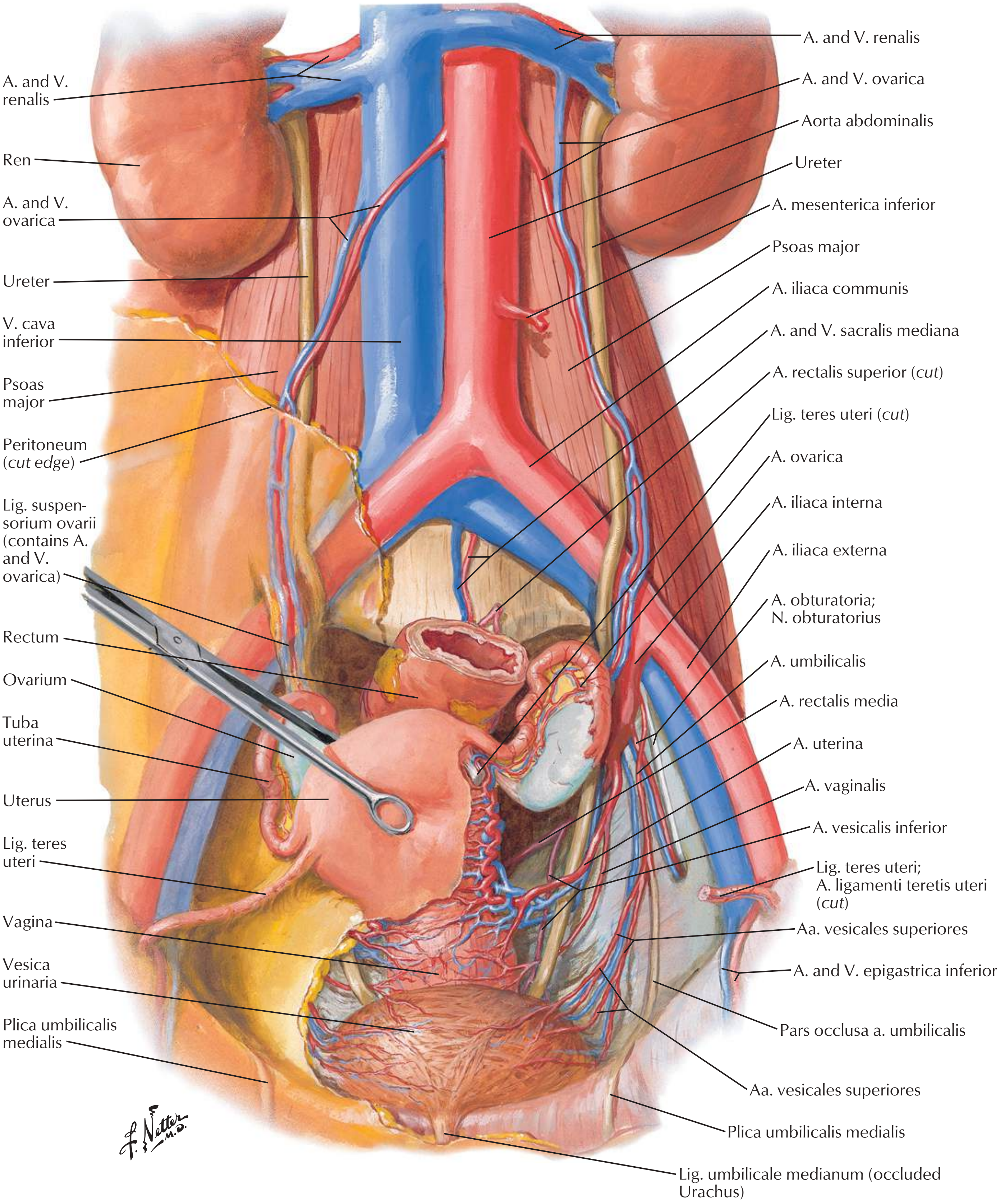
MRI of male pelvis (without intravenous contrast medium)

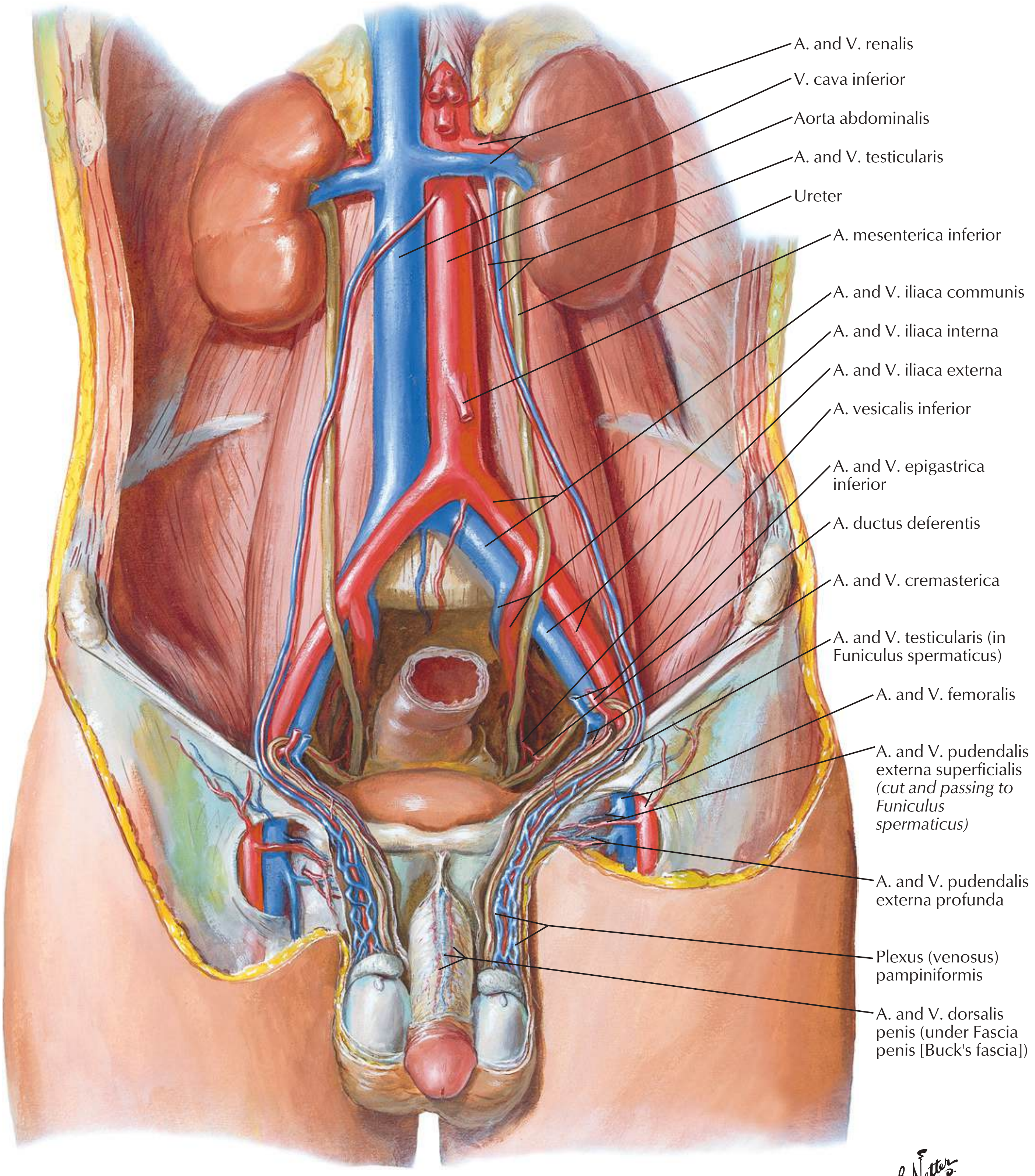

Umbilicus
Corpus vertebrae L4
Discus intervertebralis L4/L5
Os sacrum (S1)
M. rectus abdominis
Vesica urinaria
Rectum
Os pubis
Prostata
Penis


A. colica sinistra
A. mesenterica inferior
R. ascendens
Aorta abdominalis
R. descendens
V. cava inferior
Aa. sigmoideae
A. sacralis mediana
A. marginalis coli
A. iliaca communis
Aa. rectosigmoideae
A. iliaca externa
A. rectalis superior (bifurcatio)
A. iliaca interna
A. glutea superior
A. epigastrica inferior
A. obturatoria accessoria
A. rectalis media
A. glutea inferior
Spina ischiadica
A. obturatoria
Obturator internus
A. pudendalis interna
A. umbilicalis
A. pudendalis interna
A. vesicalis inferior
A. ductus deferentis
Canalis pudendalis (Alcocki)
A. vesicalis superior
Sphincter externus ani
A. rectalis media
A. rectalis inferior
A. rectalis inferior
Levator ani
F. Netter M.D.


V. mesenterica inferior (to V. portae hepatis via V. splenica)
V. cava inferior
Vv. sigmoideae
Vv. iliacae communes
V. sacralis mediana
V. rectalis superior (bifurcatio)
V. iliaca externa
V. iliaca interna
V. obturatoria
V. vesicalis superior; V. uterina (from Plexus venosus uterinus)
V. rectalis media
V. pudendalis interna
V. anastomotica between Plexus venosi rectales internus and perimuscularis
V. vaginalis (from Plexus venosus vaginalis)
V. vesicalis inferior
V. pudendalis interna (in Canalis pudendalis [Alcocki])
V. rectalis inferior
V. anastomotica between Plexus venosi rectales internus and externus
Plexus venosus rectalis internus
Plexus venosus rectalis perimuscularis
Plexus venosus rectalis externus
F. Netter M.D.

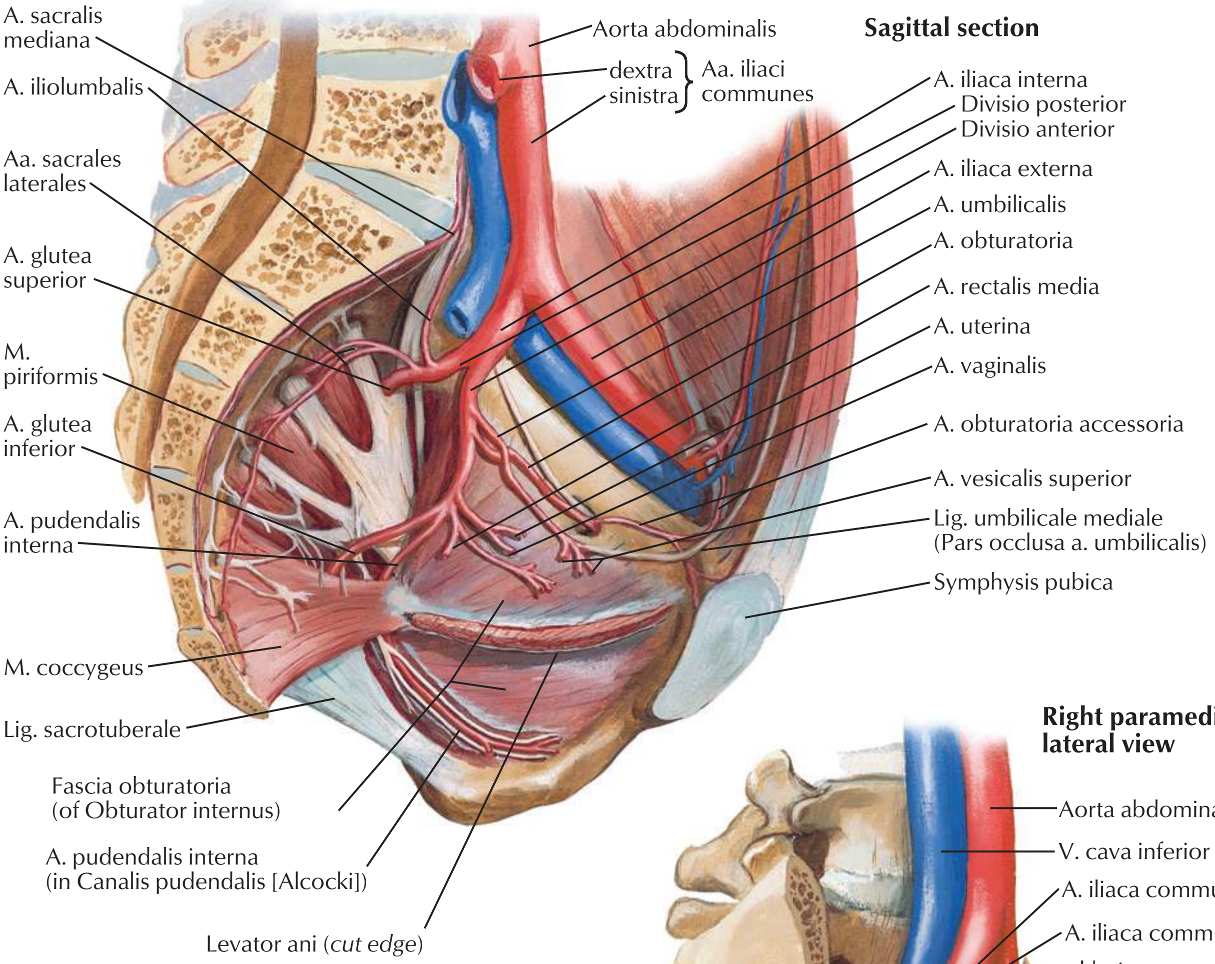
Arteries and Veins of Pelvic Organs: Female Anterior View


A. and V. renalis
Ren
A. and V. ovarica
Ureter
V. cava inferior
Psoas major
Peritoneum (*cut edge*)
Lig. suspensorium ovarii (contains A. and V. ovarica)
Rectum
Ovarium
Tuba uterina
Uterus
Lig. teres uteri
Vagina
Vesica urinaria
Plica umbilicalis medialis
A. and V. renalis
A. and V. ovarica
Aorta abdominalis
Ureter
A. mesenterica inferior
Psoas major
A. iliaca communis
A. and V. sacralis mediana
A. rectalis superior (*cut*)
Lig. teres uteri (*cut*)
A. ovarica
A. iliaca interna
A. iliaca externa
A. obturatoria;
N. obturatorius
A. umbilicalis
A. rectalis media
A. uterina
A. vaginalis
A. vesicalis inferior
Lig. teres uteri;
A. ligamenti teretis uteri (*cut*)
Aa. vesicales superiores
A. and V. epigastrica inferior
Pars occlusa a. umbilicalis
Aa. vesicales superiores
Plica umbilicalis medialis
Lig. umbilicale medianum (occluded Urachus)
f. Netter M.D.

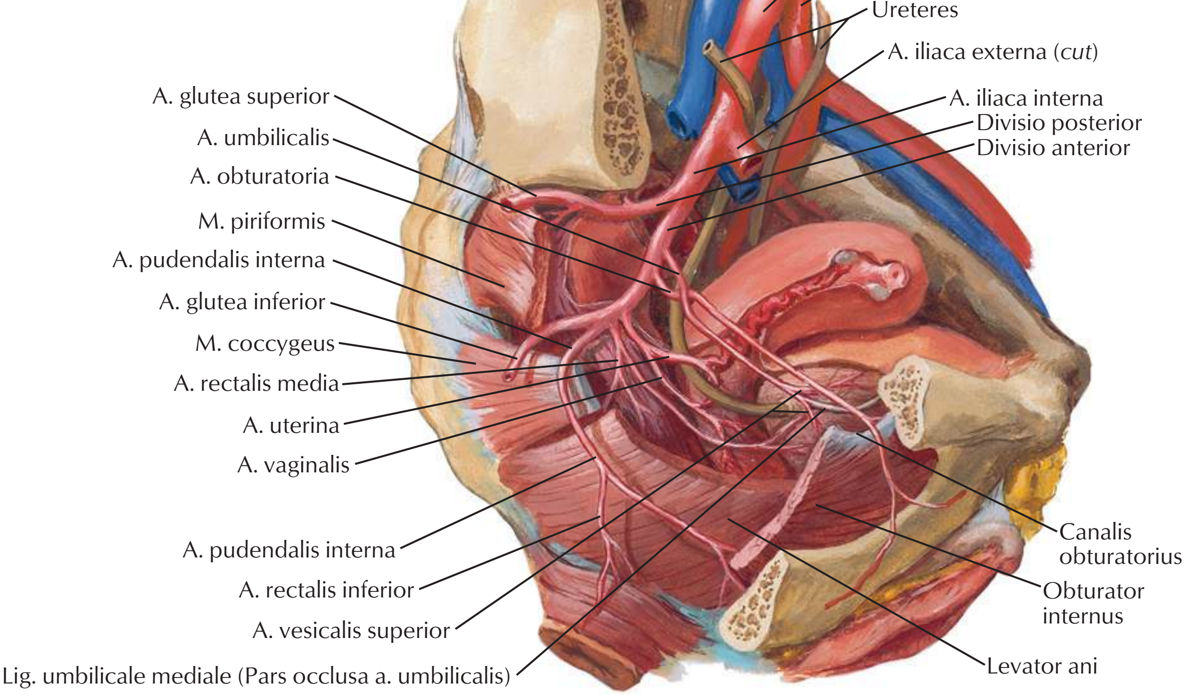

A. and V. renalis
V. cava inferior
Aorta abdominalis
A. and V. testicularis
Ureter
A. mesenterica inferior
A. and V. iliaca communis
A. and V. iliaca interna
A. and V. iliaca externa
A. vesicalis inferior
A. and V. epigastrica inferior
A. ductus deferentis
A. and V. cremasterica
A. and V. testicularis (in Funiculus spermaticus)
A. and V. femoralis
A. and V. pudendalis externa superficialis *(cut and passing to Funiculus spermaticus)*
A. and V. pudendalis externa profunda
Plexus (venosus) pampiniformis
A. and V. dorsalis penis (under Fascia penis [Buck's fascia])

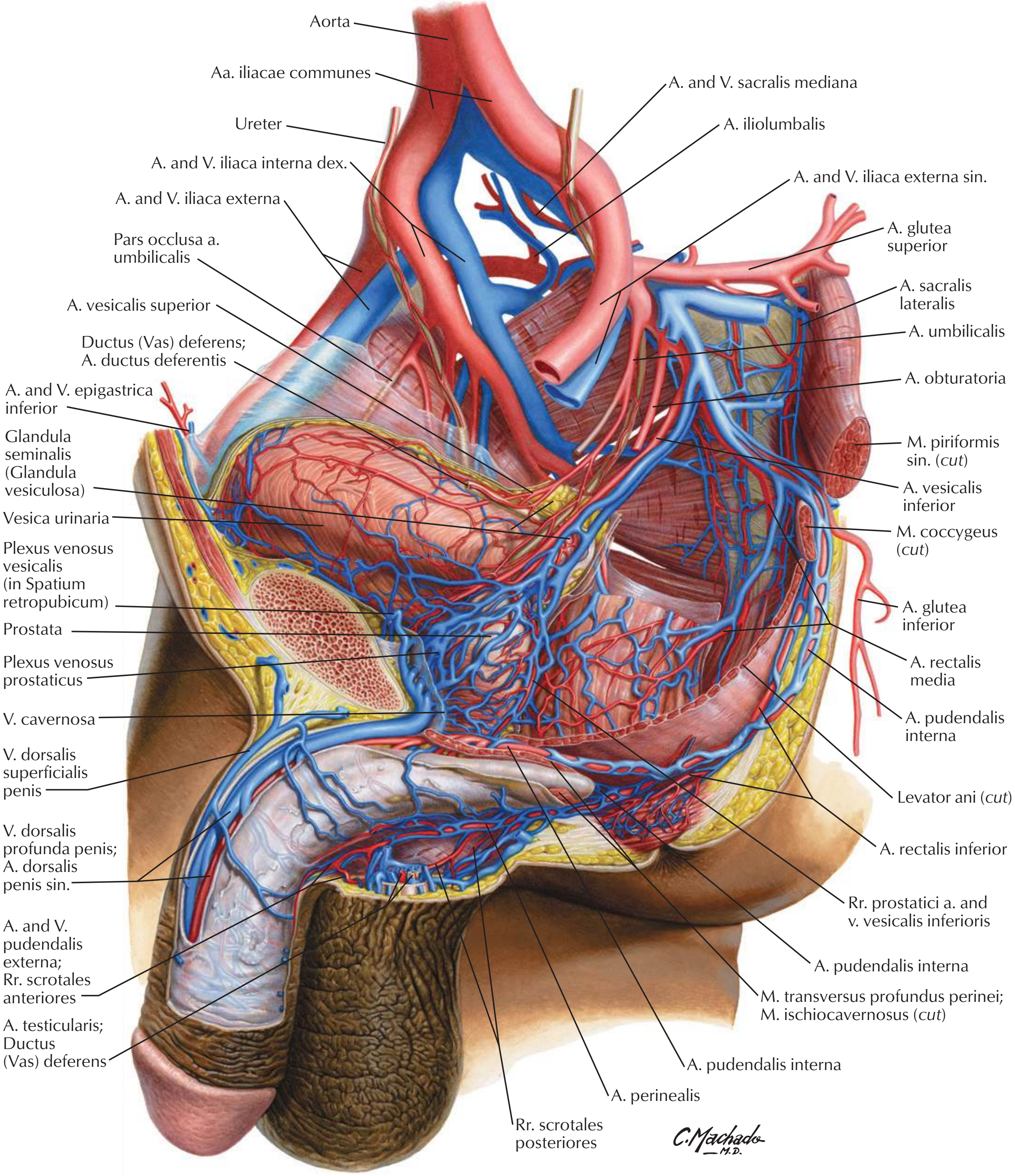
Arteries of Pelvis: Female

Sagittal section

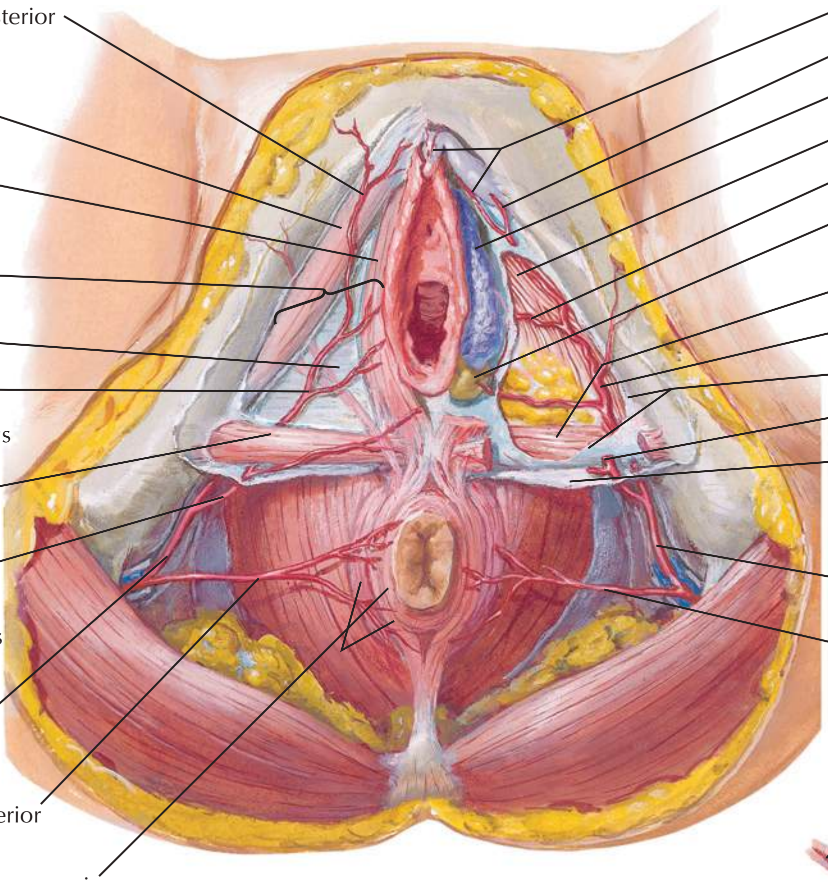

A. sacralis mediana
A. iliolumbalis
Aa. sacrales laterales
A. glutea superior
M. piriformis
A. glutea inferior
A. pudendalis interna
M. coccygeus
Lig. sacrotuberale
Fascia obturatoria (of Obturator internus)
A. pudendalis interna (in Canalis pudendalis [Alcocki])
Levator ani (*cut edge*)
Aorta abdominalis
dextra
sinistra
Aa. iliaci communes
A. iliaca interna
Divisio posterior
Divisio anterior
A. iliaca externa
A. umbilicalis
A. obturatoria
A. rectalis media
A. uterina
A. vaginalis
A. obturatoria accessoria
A. vesicalis superior
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Symphysis pubica

Right paramedian section: lateral view

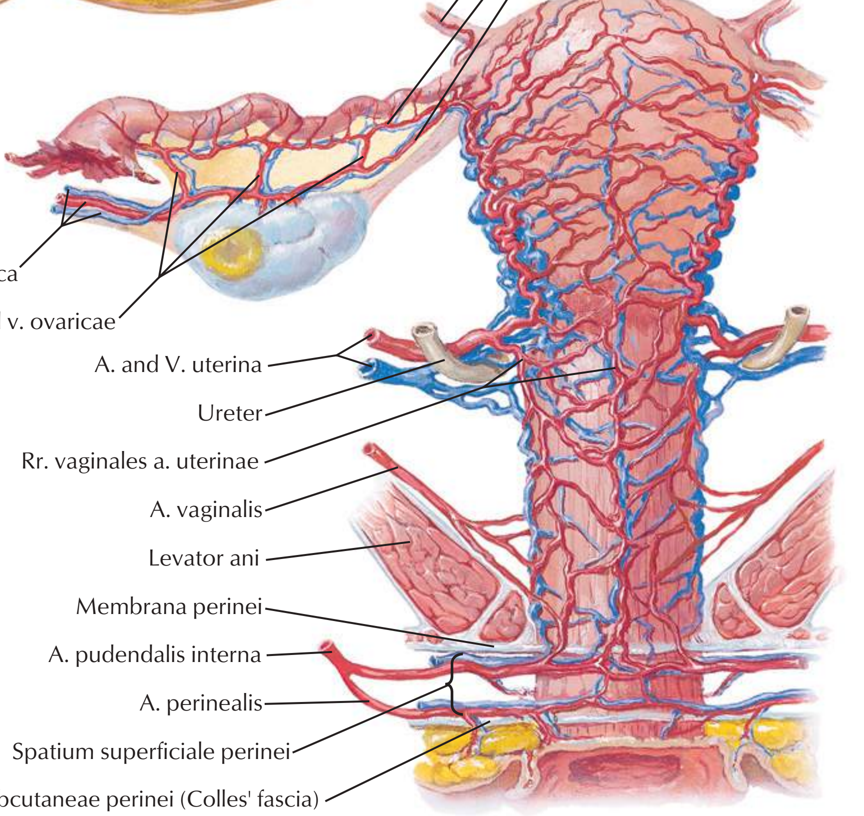

Aorta abdominalis
V. cava inferior
A. iliaca communis dex.
A. iliaca communis sin.
Ureteres
A. iliaca externa (*cut*)
A. iliaca interna
Divisio posterior
Divisio anterior
A. glutea superior
A. umbilicalis
A. obturatoria
M. piriformis
A. pudendalis interna
A. glutea inferior
M. coccygeus
A. rectalis media
A. uterina
A. vaginalis
A. pudendalis interna
A. rectalis inferior
A. vesicalis superior
Lig. umbilicale mediale (Pars occlusa a. umbilicalis)
Canalis obturatorius
Obturator internus
Levator ani


Aorta
Aa. iliacae communes
Ureter
A. and V. iliaca interna dex.
A. and V. iliaca externa
Pars occlusa a. umbilicalis
A. vesicalis superior
Ductus (Vas) deferens; A. ductus deferentis
A. and V. epigastrica inferior
Glandula seminalis (Glandula vesiculosa)
Vesica urinaria
Plexus venosus vesicalis (in Spatium retropubicum)
Prostata
Plexus venosus prostaticus
V. cavernosa
V. dorsalis superficialis penis
V. dorsalis profunda penis; A. dorsalis penis sin.
A. and V. pudendalis externa; Rr. scrotales anteriores
A. testicularis; Ductus (Vas) deferens
A. and V. sacralis mediana
A. iliolumbalis
A. and V. iliaca externa sin.
A. glutea superior
A. sacralis lateralis
A. umbilicalis
A. obturatoria
M. piriformis sin. (cut)
A. vesicalis inferior
M. coccygeus (cut)
A. glutea inferior
A. rectalis media
A. pudendalis interna
Levator ani (cut)
A. rectalis inferior
Rr. prostatici a. and v. vesicalis inferioris
A. pudendalis interna
M. transversus profundus perinei; M. ischiocavernosus (cut)
A. pudendalis interna
A. perinealis
Rr. scrotales posteriores
C. Machado M.D.

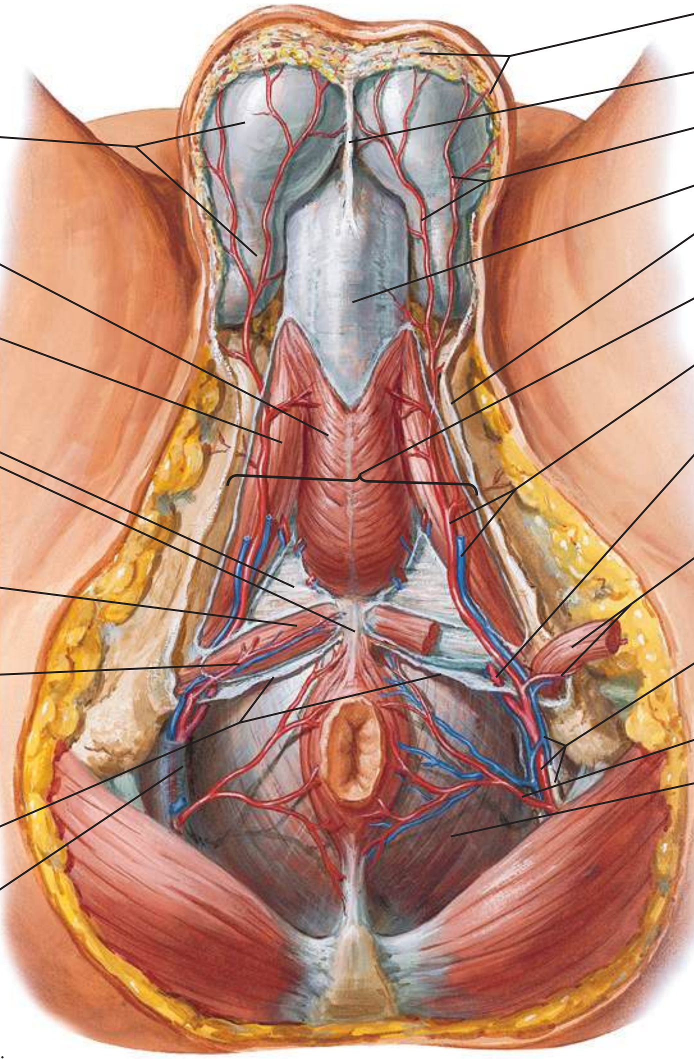
Arteries and Veins of Perineum and Uterus


R. labialis posterior
M. ischio-cavernosus
M. bulbo-spongiosus
Spatium superficiale perinei
Membrana perinei
A. perinealis
M. transversus superficialis perinei
A. perinealis
A. pudendalis interna (in Canalis pudendalis [Alcocki])
A. rectalis inferior
Sphincter externus ani
A. dorsalis clitoridis
A. profunda clitoridis
Bulbus vestibuli
Compressor urethrae
A. bulbi vestibuli
Glandula vestibularis major (Bartholini)
M. transversus profundus perinei
A. pudendalis interna
Membrana perinei (*cut away*)
A. perinealis (*cut*)
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut and reflected*) to open Spatium superficiale perinei
A. pudendalis interna (in Canalis pudendalis [Alcocki])
A. rectalis inferior

Note: Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei) removed from muscles of Spatium superficiale perinei

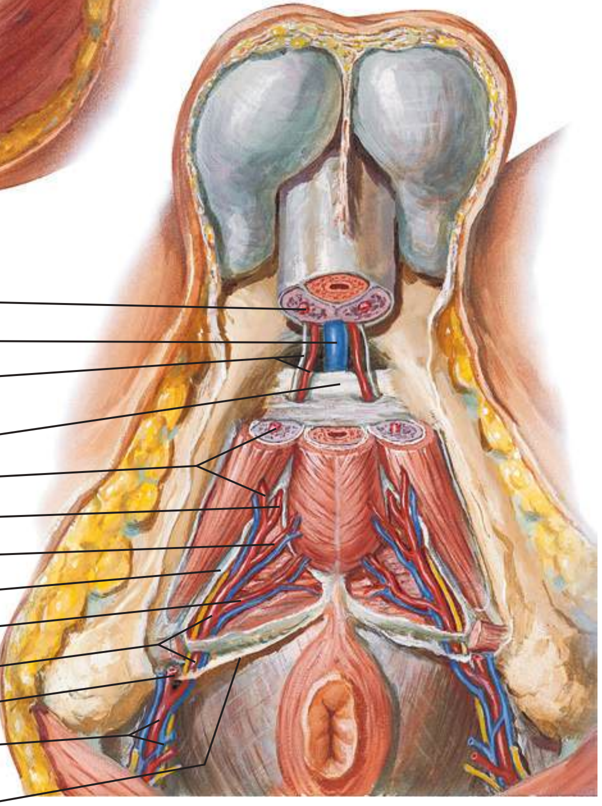

R. lig. teretis uteri
R. tubarius
R. ovaricus
Branches of A. uterina
A. and V. ovarica
Rr. tubarii a. and v. ovaricae
A. and V. uterina
Ureter
Rr. vaginales a. uterinae
A. vaginalis
Levator ani
Membrana perinei
A. pudendalis interna
A. perinealis
Spatium superficiale perinei
Stratum membranosum telae subcutaneae perinei (Colles' fascia)

F. Netter M.D.
C. Machado M.D.

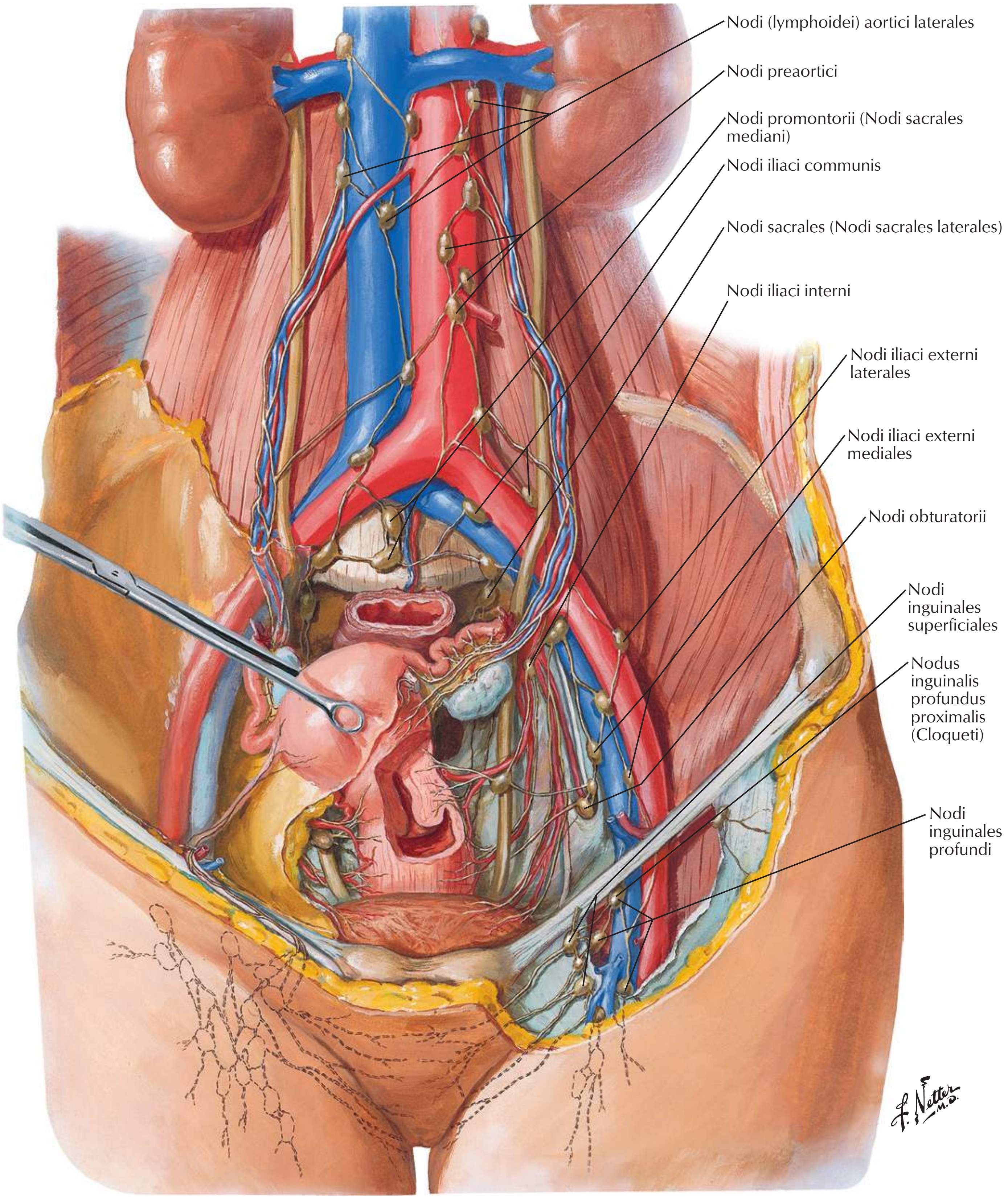

Fascia spermatica externa (over Testis and Funiculus spermaticus)
M. bulbospongiosus
M. ischiocavernosus
Membrana perinei
Corpus perineale
M. transversus superficialis perinei
A. transversa perinei
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (cut edge)
Canalis pudendalis (Alcocki)
Tunica darta scroti (Dartos fascia of scrotum)
Septum scroti
Rr. scrotales posteriores
Fascia penis (Buck's fascia)
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (cut edge)
Spatium superficiale perinei (opened)
A. and V. perinealis
A. pudendalis interna (passes superior to Membrana perinei)
M. transversus superficialis perinei; A. transversa perinei (cut and reflected)
A. and V. pudendalis interna; N. pudendalis (cut) (in Canalis pudendalis [Alcocki], opened up)
A. rectalis inferior
Fascia inferior diaphragmatis pelvis (roof of Fossa ischioanalis)

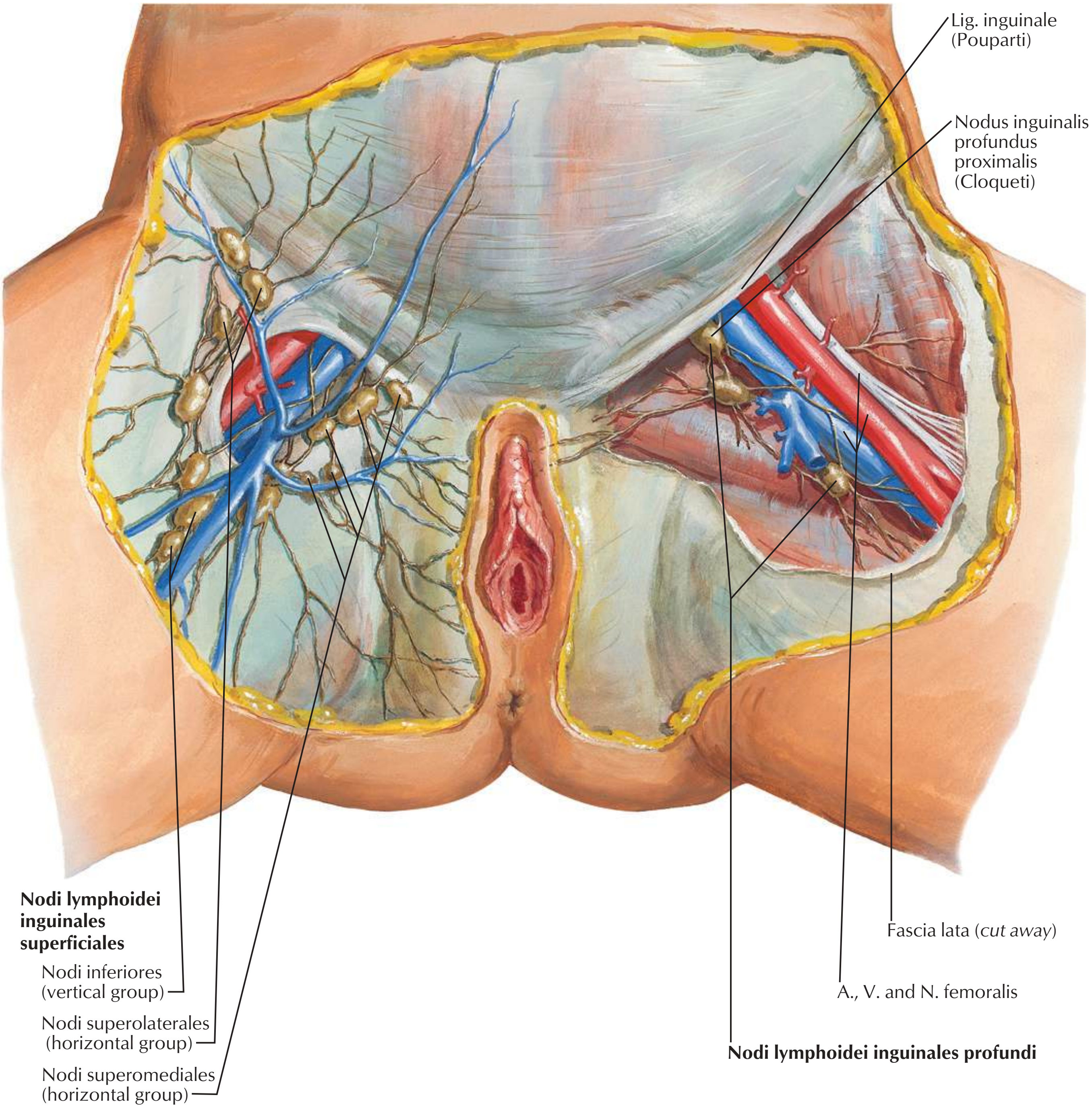
Note: Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei) removed from muscles of Spatium superficiale perinei)

F. Netter M.D.

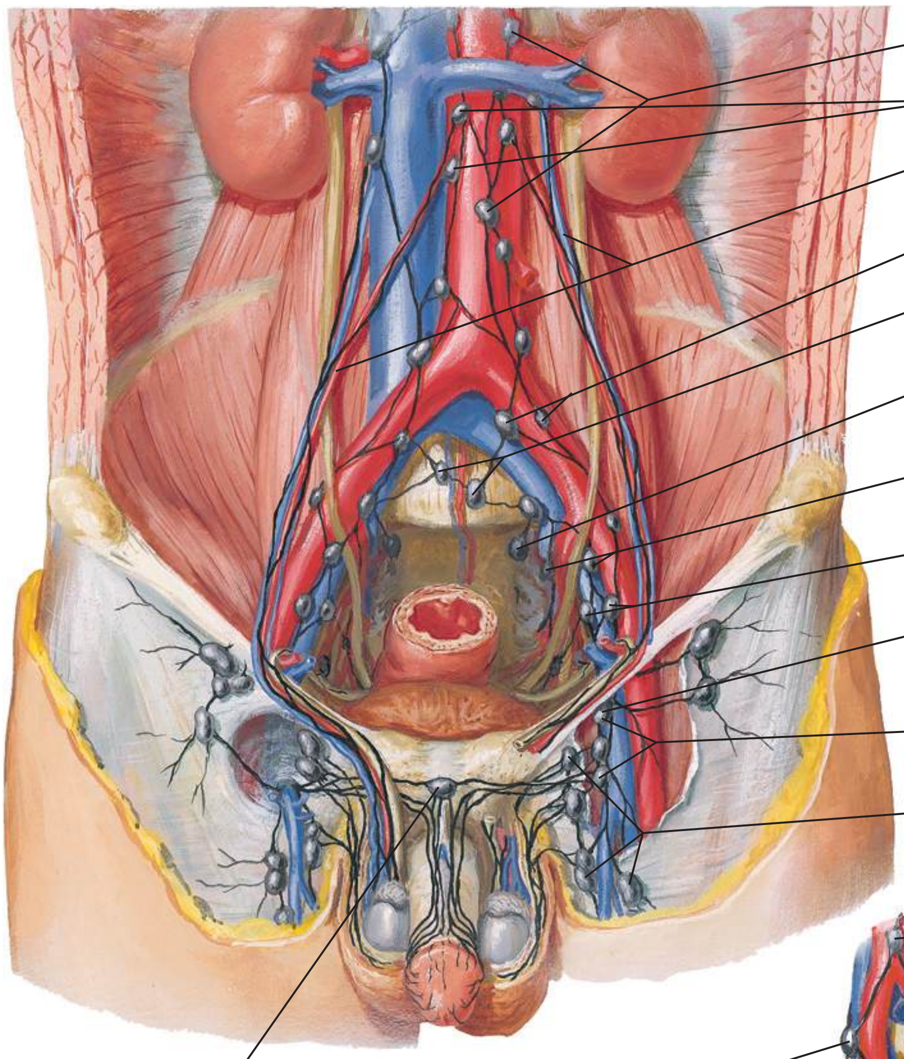

A. profunda penis
V. dorsalis profunda penis
A. and N. dorsalis penis
Lig. transversum perinei (anterior thickening of Membrana perinei)
A. profunda penis
A. dorsalis penis
A. urethralis
Membrana perinei (cut edge)
A. bulbi penis
A. pudendalis interna
A. perinealis (cut)
A. and V. pudendalis interna (in Canalis pudendalis [Alcocki])
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (cut edge)

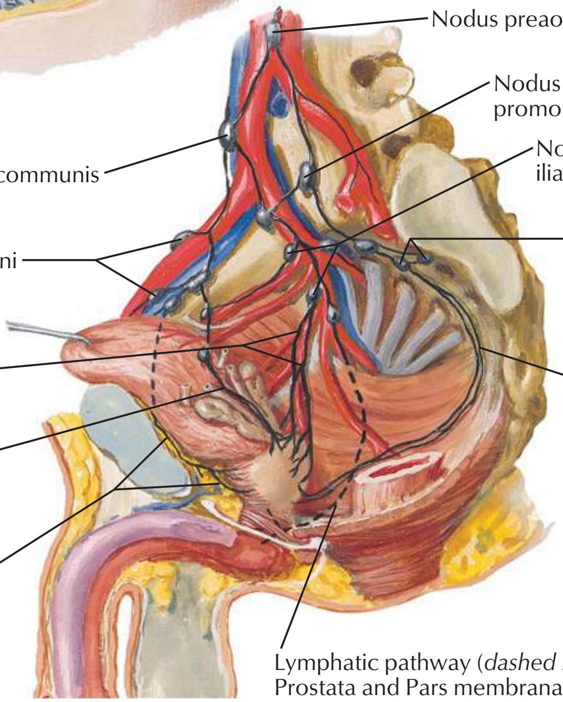
Lymph Vessels and Nodes of Pelvis and Genitalia: Female


Nodi (lymphoidei) aortici laterales
Nodi preaortici
Nodi promontorii (Nodi sacrales mediani)
Nodi iliaci communis
Nodi sacrales (Nodi sacrales laterales)
Nodi iliaci interni
Nodi iliaci externi laterales
Nodi iliaci externi mediales
Nodi obturatorii
Nodi inguinales superficiales
Nodus inguinalis profundus proximalis (Cloqueti)
Nodi inguinales profundi


Lig. inguinale (Pouparti)
Nodus inguinalis profundus proximalis (Cloqueti)
Nodi lymphoidei inguinales superficiales
Nodi inferiores (vertical group)
Nodi superolaterales (horizontal group)
Nodi superomediales (horizontal group)
Fascia lata (cut away)
A., V. and N. femoralis
Nodi lymphoidei inguinales profundi

Lymph Vessels and Nodes of Pelvis and Genitalia: Male


Nodi (lymphoidei) preaortici
Nodi aortici laterales
Lymphatic pathways from Testes along Aa. and Vv. testiculares
Nodi iliaci communes
Nodi promontorii (Nodi sacrales mediani)
Nodi sacrales (Nodi sacrales laterales)
Nodi iliaci interni
Nodi iliaci externi
Nodus inguinalis profundus proximalis (Cloqueti)
Nodi inguinales profundi
Nodi inguinales superficiales
Nodus presymphysialis (Nodus prepubicus)



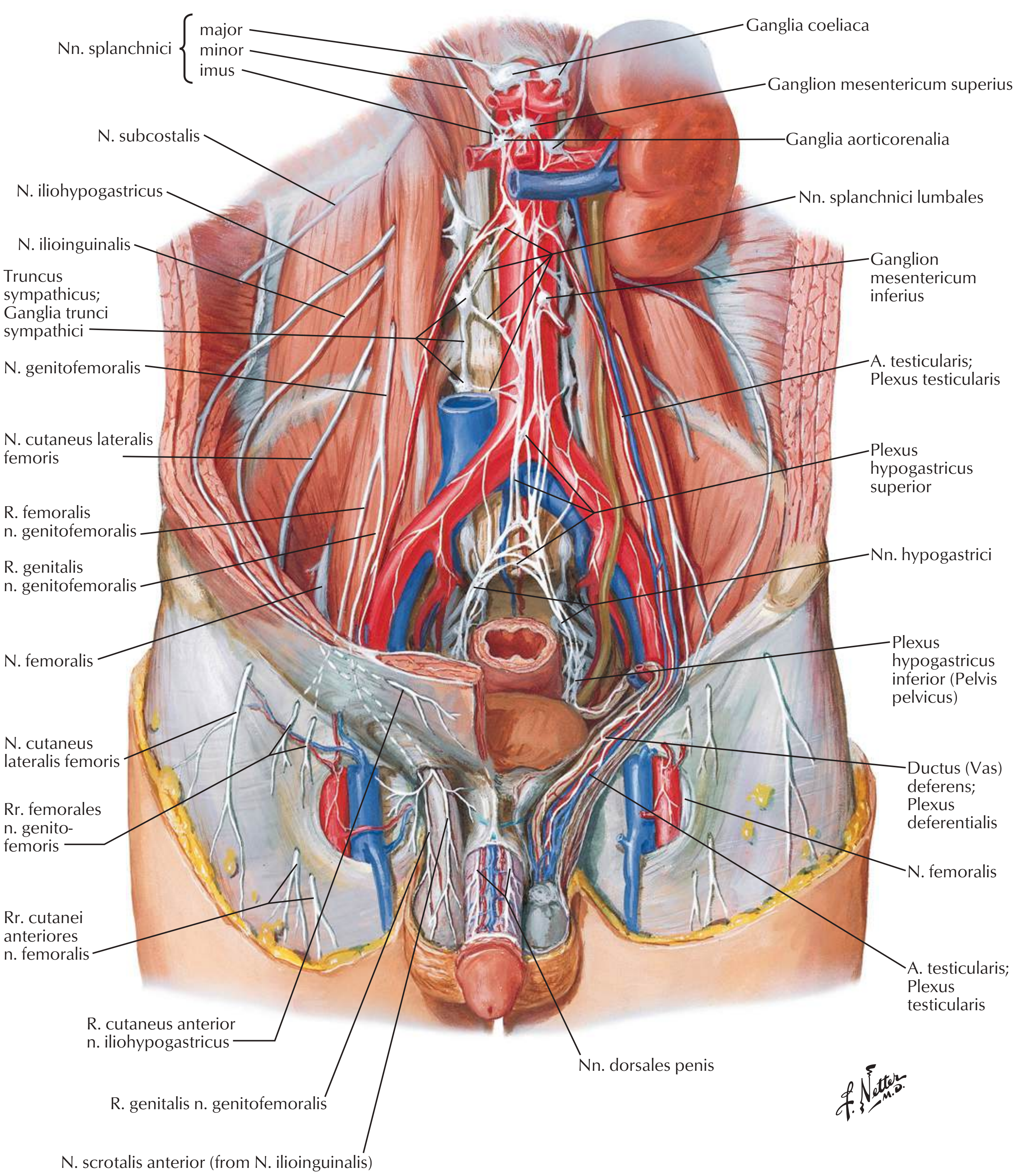
Lymphatic drainage from Prostata

Nodus preaorticus
Nodus promontorii
Nodi iliaci interni
Nodus iliacus communis
Nodi iliaci externi
Nodi sacrales medianus and lateralis
Lymphatic pathway along A. and V. vesicalis inferior to Nodi iliaci interni (principal pathway)
Lymphatic pathway alongside Rectum to Nodi sacrales mediani and laterales
Lymphatic pathway over Vesica urinaria to Nodi iliaci externi
Plexus venosus vesicalis (in Spatium retropubicum); Lymphatic pathway (*dashed line*) to Nodi iliaci externi
Lymphatic pathway (*dashed line*) from lower Prostata and Pars membranacea urethrae along A. and V. pudendalis interna (beneath Diaphragma pelvis) to Nodi iliaci interni

F. Netter M.D.
C. Machado M.D.

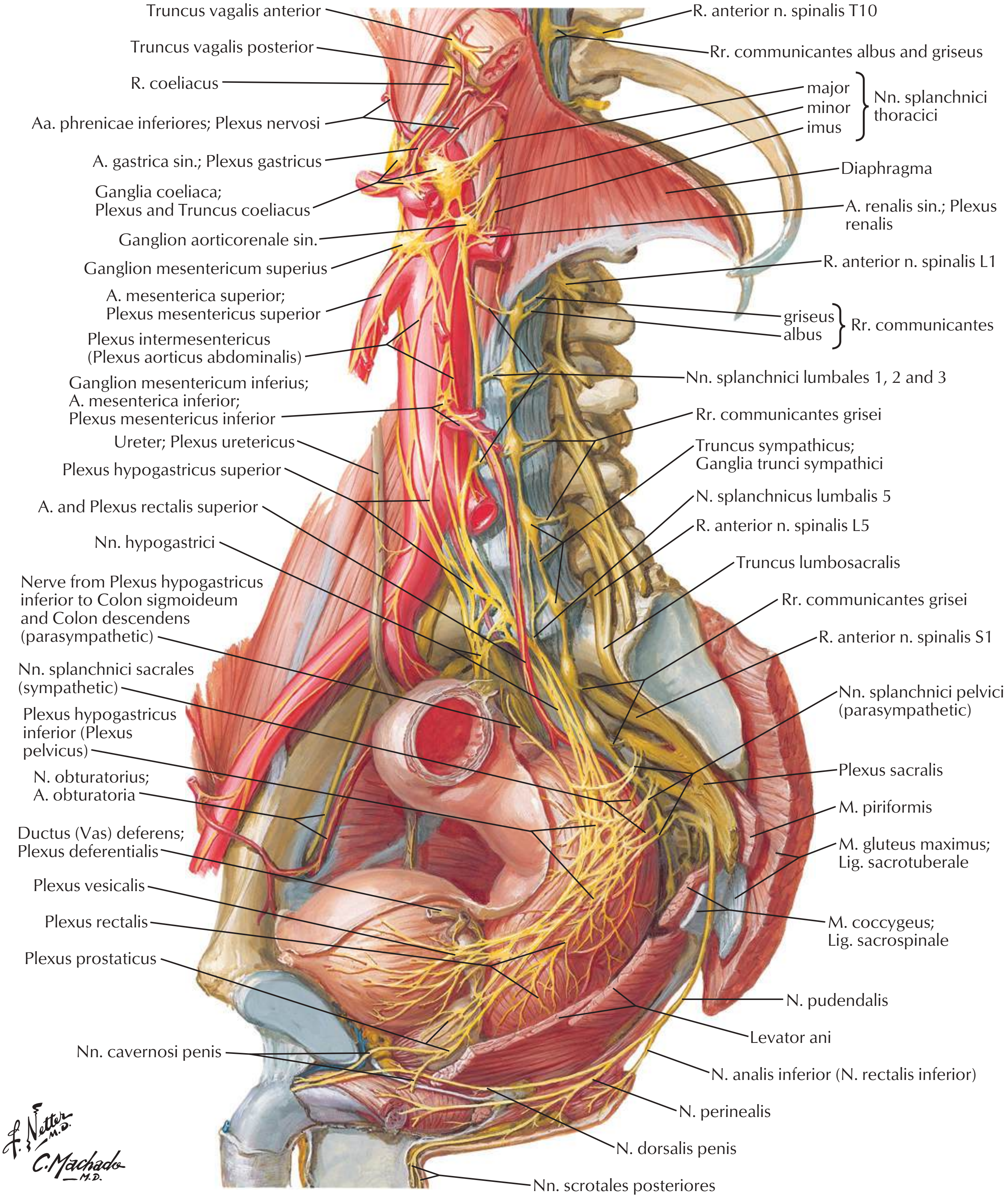
Nerves of External Genitalia: Male

See also Plate 300


Nn. splanchnici
major
minor
imus
N. subcostalis
N. iliohypogastricus
N. ilioinguinalis
Truncus sympathicus; Ganglia trunci sympathici
N. genitofemoralis
N. cutaneus lateralis femoris
R. femoralis n. genitofemoralis
R. genitalis n. genitofemoralis
N. femoralis
N. cutaneus lateralis femoris
Rr. femorales n. genito-femoris
Rr. cutanei anteriores n. femoralis
R. cutaneus anterior n. iliohypogastricus
R. genitalis n. genitofemoralis
N. scrotalis anterior (from N. ilioinguinalis)
Nn. dorsales penis
Ganglia coeliaca
Ganglion mesentericum superius
Ganglia aorticorenalia
Nn. splanchnici lumbales
Ganglion mesentericum inferius
A. testicularis; Plexus testicularis
Plexus hypogastricus superior
Nn. hypogastrici
Plexus hypogastricus inferior (Pelvis pelvicus)
Ductus (Vas) deferens; Plexus deferentialis
N. femoralis
A. testicularis; Plexus testicularis
F. Netter M.D.

Nerves of Pelvic Viscera: Male

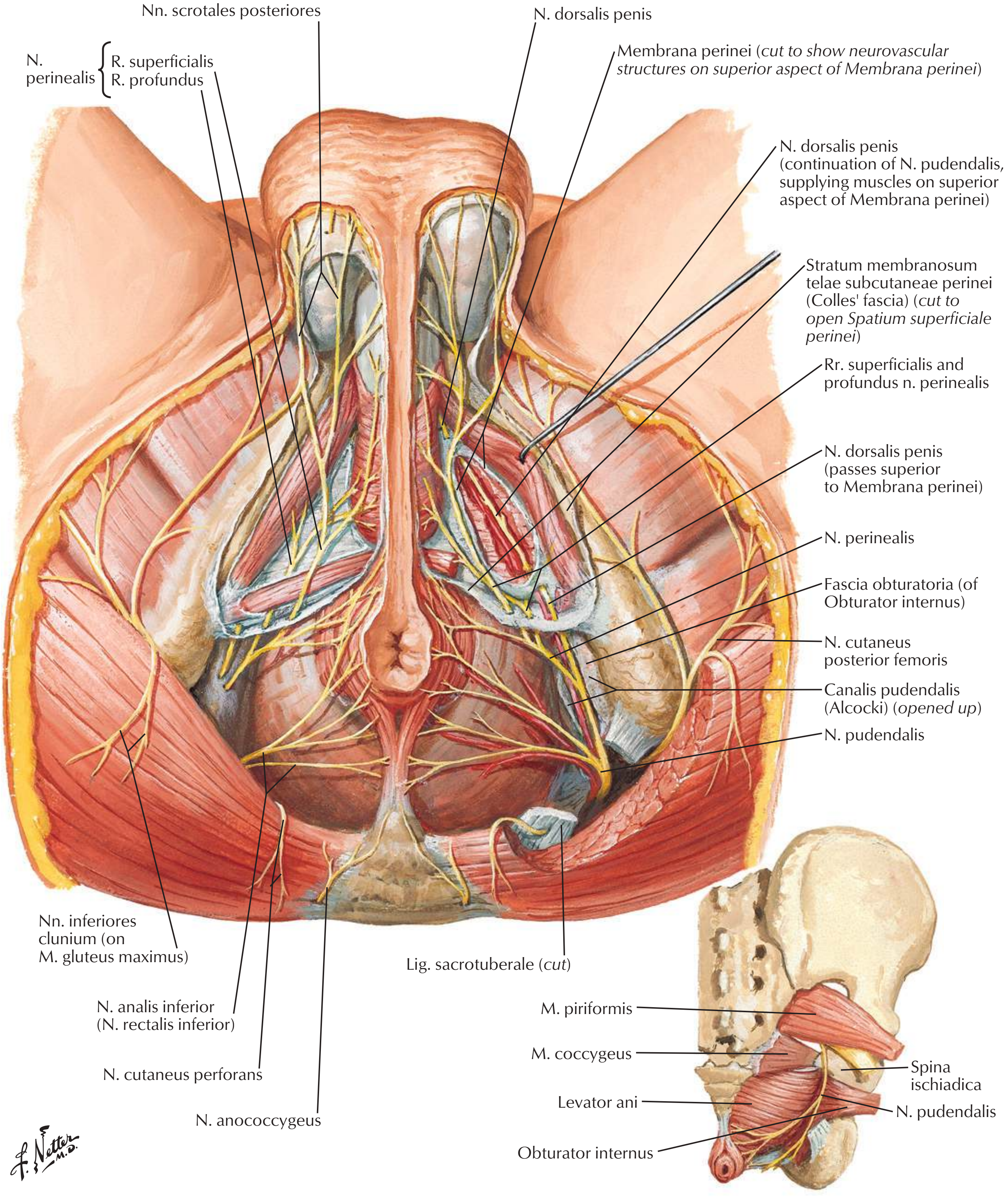
See also Plates 300, 385



Truncus vagalis anterior
Truncus vagalis posterior
R. coeliacus
Aa. phrenicae inferiores; Plexus nervosi
A. gastrica sin.; Plexus gastricus
Ganglia coeliaca; Plexus and Truncus coeliacus
Ganglion aorticorenale sin.
Ganglion mesentericum superius
A. mesenterica superior; Plexus mesentericus superior
Plexus intermesentericus (Plexus aorticus abdominalis)
Ganglion mesentericum inferius; A. mesenterica inferior; Plexus mesentericus inferior
Ureter; Plexus uretericus
Plexus hypogastricus superior
A. and Plexus rectalis superior
Nn. hypogastrici
Nerve from Plexus hypogastricus inferior to Colon sigmoideum and Colon descendens (parasympathetic)
Nn. splanchnici sacrales (sympathetic)
Plexus hypogastricus inferior (Plexus pelvicus)
N. obturatorius; A. obturatoria
Ductus (Vas) deferens; Plexus deferentialis
Plexus vesicalis
Plexus rectalis
Plexus prostaticus
Nn. cavernosi penis
R. anterior n. spinalis T10
Rr. communicantes albus and griseus
major
minor
imus
Nn. splanchnici thoracici
Diaphragma
A. renalis sin.; Plexus renalis
R. anterior n. spinalis L1
griseus
albus
Rr. communicantes
Nn. splanchnici lumbales 1, 2 and 3
Rr. communicantes grisei
Truncus sympathicus; Ganglia trunci sympathici
N. splanchnicus lumbalis 5
R. anterior n. spinalis L5
Truncus lumbosacralis
Rr. communicantes grisei
R. anterior n. spinalis S1
Nn. splanchnici pelvici (parasympathetic)
Plexus sacralis
M. piriformis
M. gluteus maximus; Lig. sacrotuberale
M. coccygeus; Lig. sacrospinale
N. pudendalis
Levator ani
N. analis inferior (N. rectalis inferior)
N. perinealis
N. dorsalis penis
Nn. scrotales posteriores
F. Netter M.D.
C. Machado M.D.

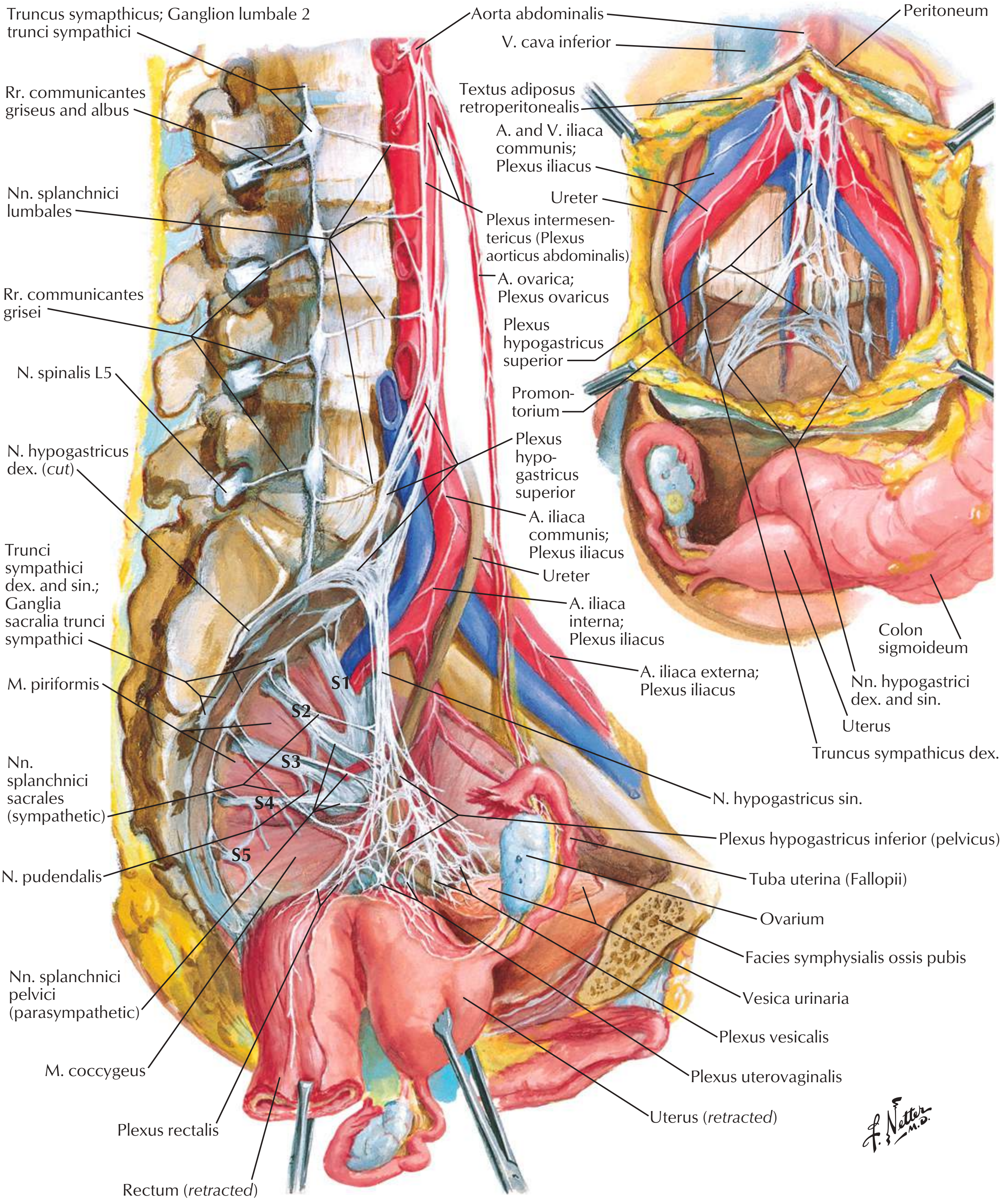
Nerves of Perineum: Male

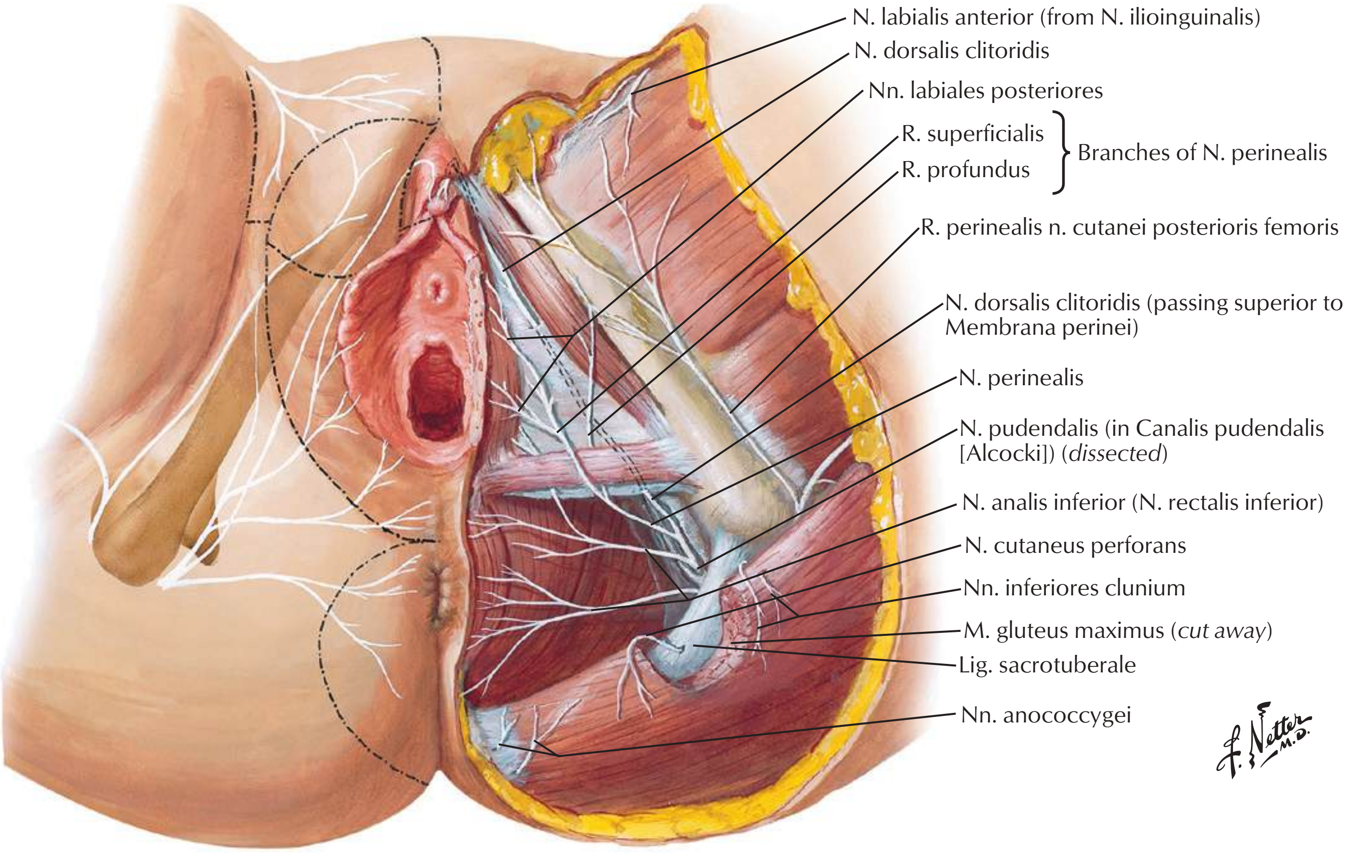
See also Plate 398

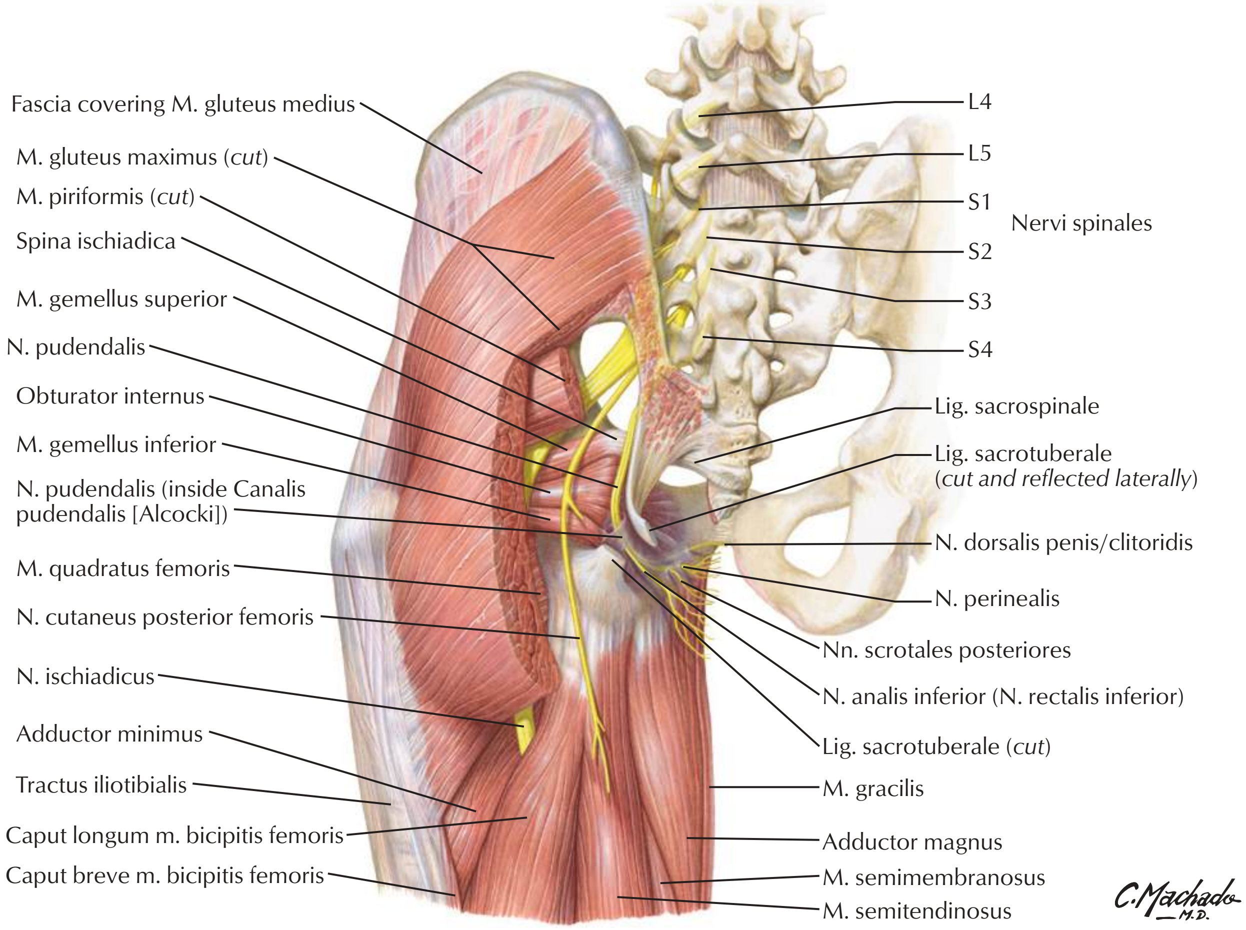

Nn. scrotales posteriores
N. dorsalis penis
N. perinealis
R. superficialis
R. profundus
Membrana perinei (*cut to show neurovascular structures on superior aspect of Membrana perinei*)
N. dorsalis penis (continuation of N. pudendalis, supplying muscles on superior aspect of Membrana perinei)
Stratum membranosum telae subcutaneae perinei (Colles' fascia) (*cut to open Spatium superficiale perinei*)
Rr. superficialis and profundus n. perinealis
N. dorsalis penis (passes superior to Membrana perinei)
N. perinealis
Fascia obturatoria (of Obturator internus)
N. cutaneus posterior femoris
Canalis pudendalis (Alcocki) (*opened up*)
N. pudendalis
Nn. inferiores clunium (on M. gluteus maximus)
N. analis inferior (N. rectalis inferior)
N. cutaneus perforans
N. anococcygeus
Lig. sacrotuberale (*cut*)
M. piriformis
M. coccygeus
Levator ani
Obturator internus
Spina ischiadica
N. pudendalis

Nerves of Pelvic Viscera: Female

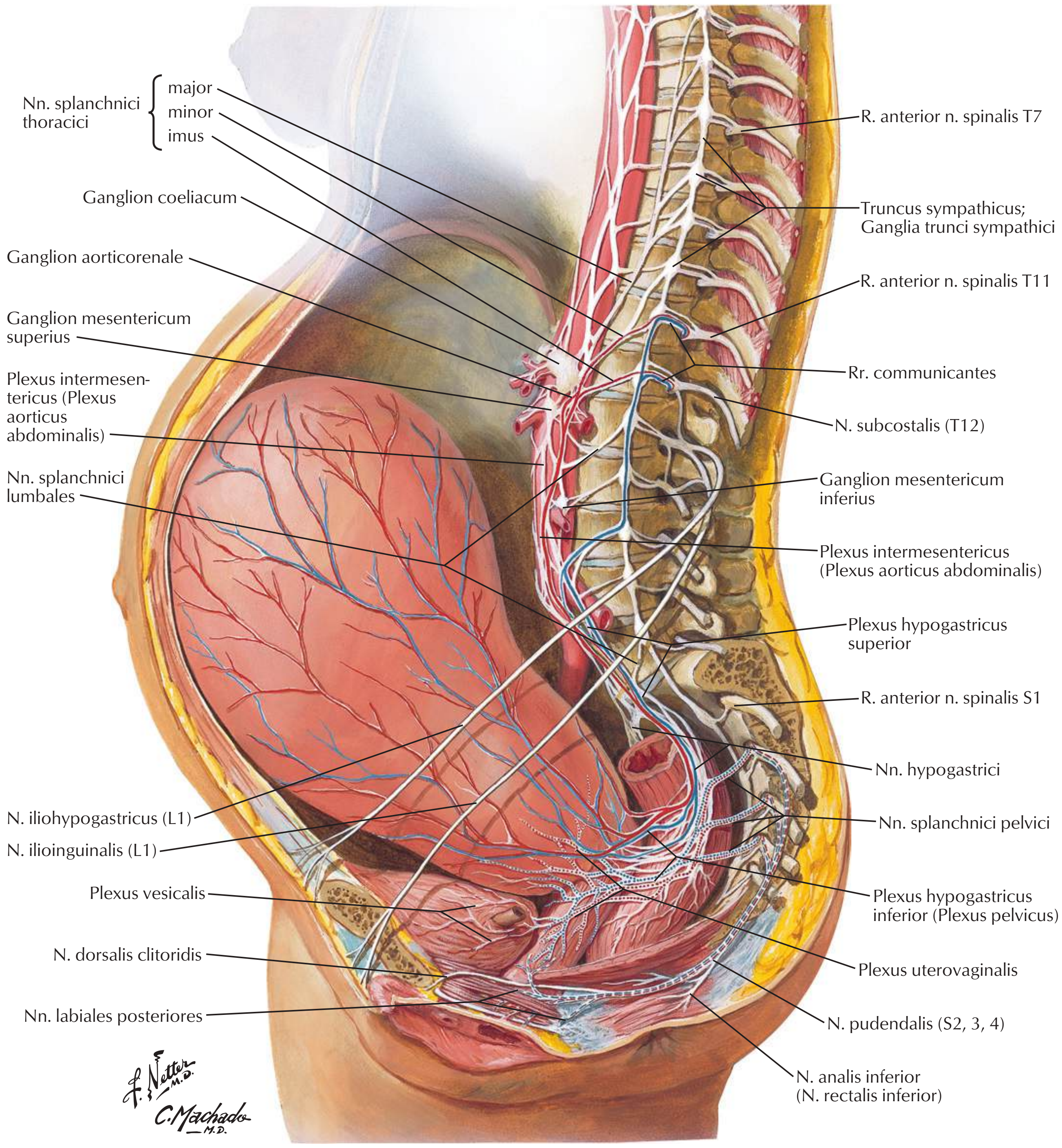
See also Plate 300


Truncus symapthicus; Ganglion lumbale 2 trunci sympathici
Rr. communicantes griseus and albus
Nn. splanchnici lumbales
Rr. communicantes grisei
N. spinalis L5
N. hypogastricus dex. (cut)
Trunci sympathici dex. and sin.; Ganglia sacralia trunci sympathici
M. piriformis
Nn. splanchnici sacrales (sympathetic)
N. pudendalis
Nn. splanchnici pelvici (parasympathetic)
M. coccygeus
Plexus rectalis
Rectum (retracted)
Aorta abdominalis
V. cava inferior
Textus adiposus retroperitonealis
A. and V. iliaca communis; Plexus iliacus
Ureter
Plexus intermesentericus (Plexus aorticus abdominalis)
A. ovarica; Plexus ovaricus
Plexus hypogastricus superior
Promontorium
Plexus hypogastricus superior
A. iliaca communis; Plexus iliacus
Ureter
A. iliaca interna; Plexus iliacus
A. iliaca externa; Plexus iliacus
S1
S2
S3
S4
S5
Peritoneum
Colon sigmoideum
Nn. hypogastrici dex. and sin.
Uterus
Truncus sympathicus dex.
N. hypogastricus sin.
Plexus hypogastricus inferior (pelvicus)
Tuba uterina (Fallopii)
Ovarium
Facies symphysialis ossis pubis
Vesica urinaria
Plexus vesicalis
Plexus uterovaginalis
Uterus (retracted)
F. Netter M.D.


N. labialis anterior (from N. ilioinguinalis)
N. dorsalis clitoridis
Nn. labiales posteriores
R. superficialis
R. profundus
Branches of N. perinealis
R. perinealis n. cutanei posterioris femoris
N. dorsalis clitoridis (passing superior to Membrana perinei)
N. perinealis
N. pudendalis (in Canalis pudendalis [Alcocki]) (*dissected*)
N. analis inferior (N. rectalis inferior)
N. cutaneus perforans
Nn. inferiores clunium
M. gluteus maximus (*cut away*)
Lig. sacrotuberale
Nn. anococcygei
F. Netter M.D.


Fascia covering M. gluteus medius
M. gluteus maximus (*cut*)
M. piriformis (*cut*)
Spina ischiadica
M. gemellus superior
N. pudendalis
Obturator internus
M. gemellus inferior
N. pudendalis (inside Canalis pudendalis [Alcocki])
M. quadratus femoris
N. cutaneus posterior femoris
N. ischiadicus
Adductor minimus
Tractus iliotibialis
Caput longum m. bicipitis femoris
Caput breve m. bicipitis femoris
L4
L5
S1
S2
S3
S4
Nervi spinales
Lig. sacrospinale
Lig. sacrotuberale (*cut and reflected laterally*)
N. dorsalis penis/clitoridis
N. perinealis
Nn. scrotales posteriores
N. analis inferior (N. rectalis inferior)
Lig. sacrotuberale (*cut*)
M. gracilis
Adductor magnus
M. semimembranosus
M. semitendinosus
C. Machado M.D.

Neuropathways in Parturition


Nn. splanchnici thoracici
major
minor
imus
Ganglion coeliacum
Ganglion aorticorenale
Ganglion mesentericum superius
Plexus intermesentericus (Plexus aorticus abdominalis)
Nn. splanchnici lumbales
N. iliohypogastricus (L1)
N. ilioinguinalis (L1)
Plexus vesicalis
N. dorsalis clitoridis
Nn. labiales posteriores
F. Netter M.D.
C. Machado M.D.
R. anterior n. spinalis T7
Truncus sympathicus; Ganglia trunci sympathici
R. anterior n. spinalis T11
Rr. communicantes
N. subcostalis (T12)
Ganglion mesentericum inferius
Plexus intermesentericus (Plexus aorticus abdominalis)
Plexus hypogastricus superior
R. anterior n. spinalis S1
Nn. hypogastrici
Nn. splanchnici pelvici
Plexus hypogastricus inferior (Plexus pelvicus)
Plexus uterovaginalis
N. pudendalis (S2, 3, 4)
N. analis inferior (N. rectalis inferior)

— Sensory fibers from Corpus and Fundus uteri accompany sympathetic fibers via Plexus hypogastricus inferior to T11, 12 (L1?)

⋯ Sensory fibers from Cervix uteri and upper Vagina accompany parasympathetic fibers of Nn. splanchnici pelvici to S2, 3, 4

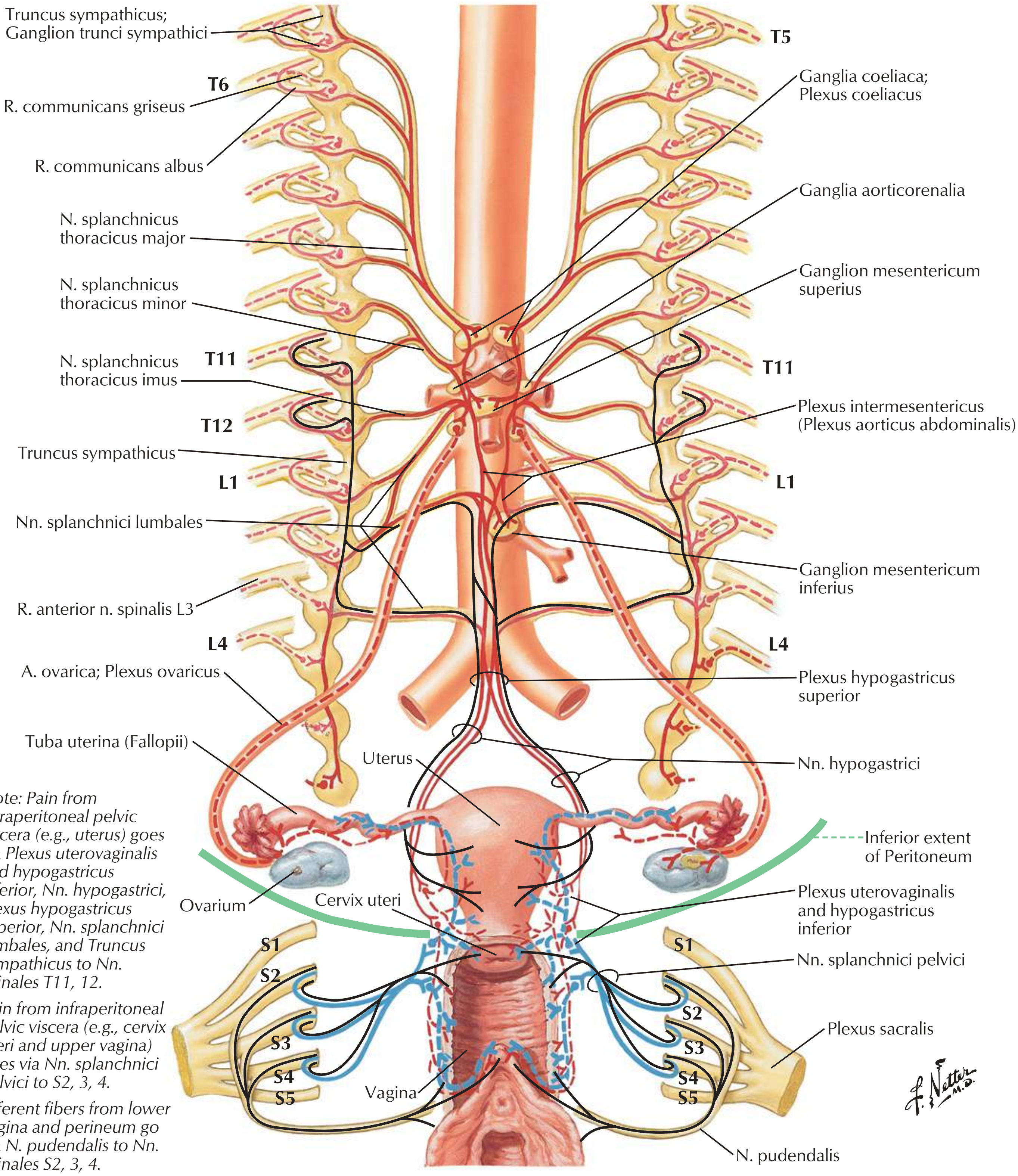
- - - - Sensory fibers from lower Vagina and Perineum accompany somatic motor fibers of N. pudendalis to S2, 3, 4

— Motor fibers to Corpus and Fundus uteri (sympathetic)

⋯ Motor fibers to lower Uterus, Cervix uteris, and upper Vagina (parasympathetic)

- - - - Motor fibers to lower Vagina and Perineum via N. pudendalis (somatic)

Innervation of Female Reproductive Organs: Schema


Truncus sympathicus;
Ganglion trunci sympathici
T5
T6
R. communicans griseus
R. communicans albus
Ganglia coeliaca;
Plexus coeliacus
Ganglia aorticorenalia
N. splanchnicus
thoracicus major
Ganglion mesentericum
superius
N. splanchnicus
thoracicus minor
T11
N. splanchnicus
thoracicus imus
T11
Plexus intermesentericus
(Plexus aorticus abdominalis)
T12
Truncus sympathicus
L1
L1
Nn. splanchnici lumbales
Ganglion mesentericum
inferius
R. anterior n. spinalis L3
L4
L4
A. ovarica; Plexus ovaricus
Plexus hypogastricus
superior
Tuba uterina (Fallopii)
Uterus
Nn. hypogastrici
Inferior extent
of Peritoneum
Ovarium
Cervix uteri
Plexus uterovaginalis
and hypogastricus
inferior
S1
S1
S2
Nn. splanchnici pelvici
S2
Plexus sacralis
S3
S3
S4
S4
S5
S5
Vagina
N. pudendalis
F. Netter M.D.

Note: Pain from intraperitoneal pelvic viscera (e.g., uterus) goes via Plexus uterovaginalis and hypogastricus inferior, Nn. hypogastrici, Plexus hypogastricus superior, Nn. splanchnici lumbales, and Truncus sympathicus to Nn. spinales T11, 12.

Pain from infraperitoneal pelvic viscera (e.g., cervix uteri and upper vagina) goes via Nn. splanchnici pelvici to S2, 3, 4.

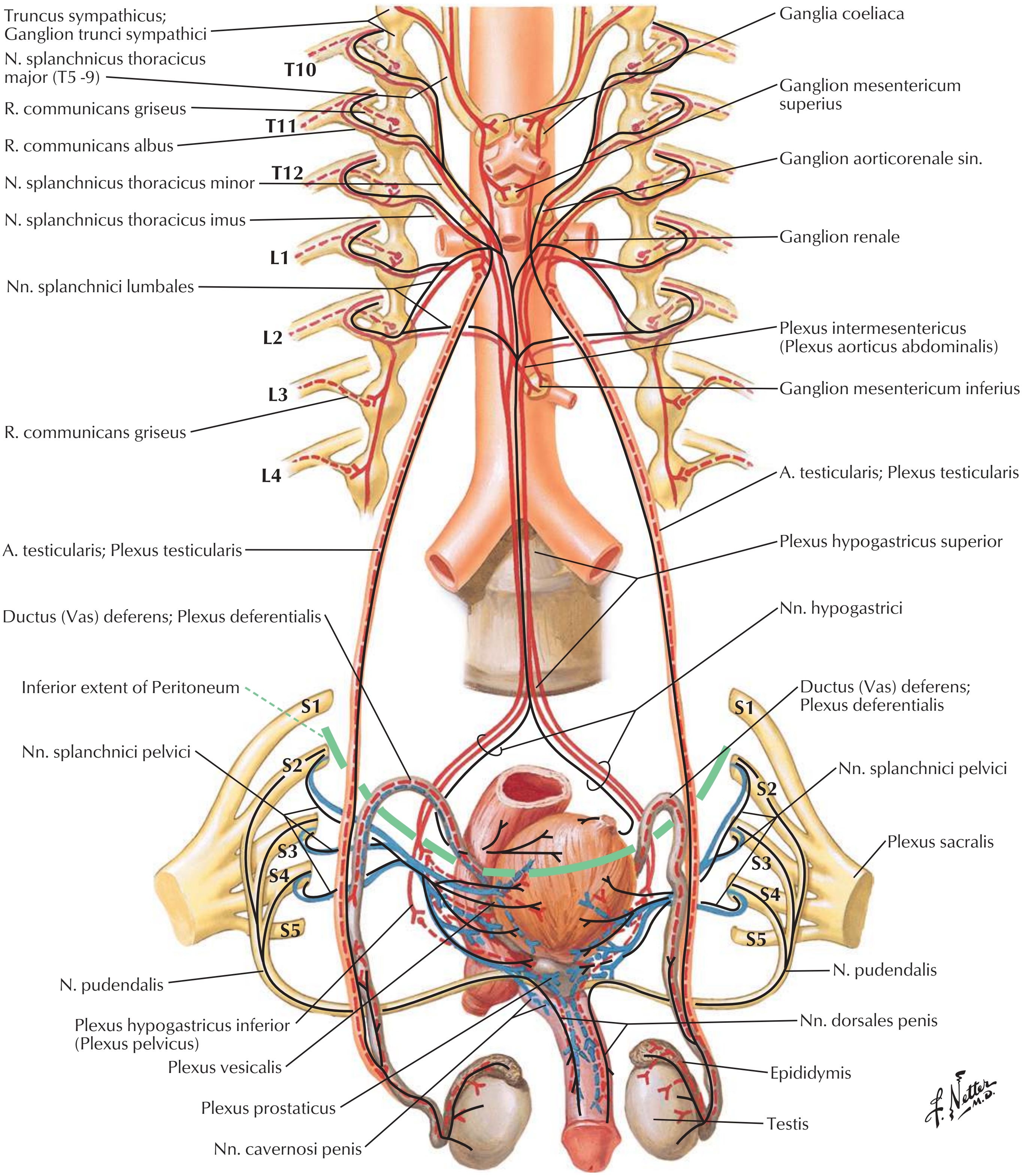
Afferent fibers from lower vagina and perineum go via N. pudendalis to Nn. spinales S2, 3, 4.

Sympathetic fibers { **Preganglionic** ―――― ; **Postganglionic** – – – –

Parasympathetic fibers { **Preganglionic** ―――― ; **Postganglionic** – – – –

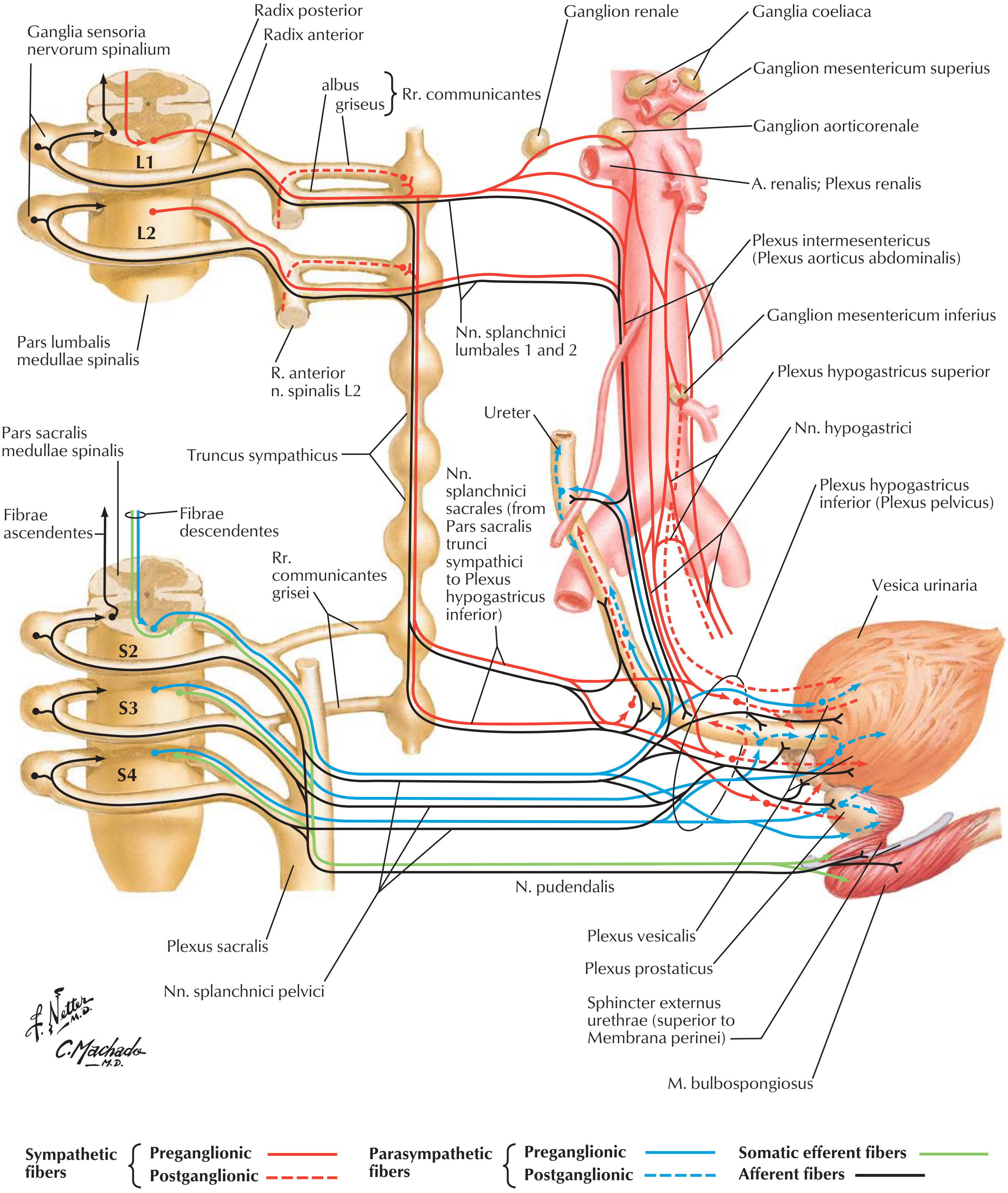
Afferent fibers ――――

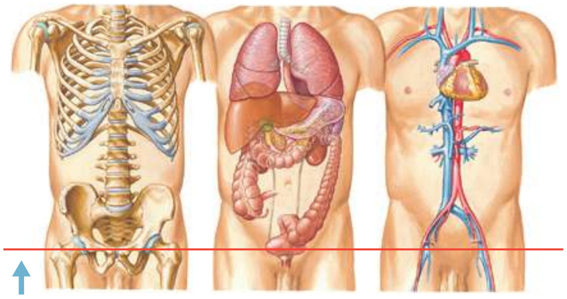
Innervation of Male Reproductive Organs: Schema

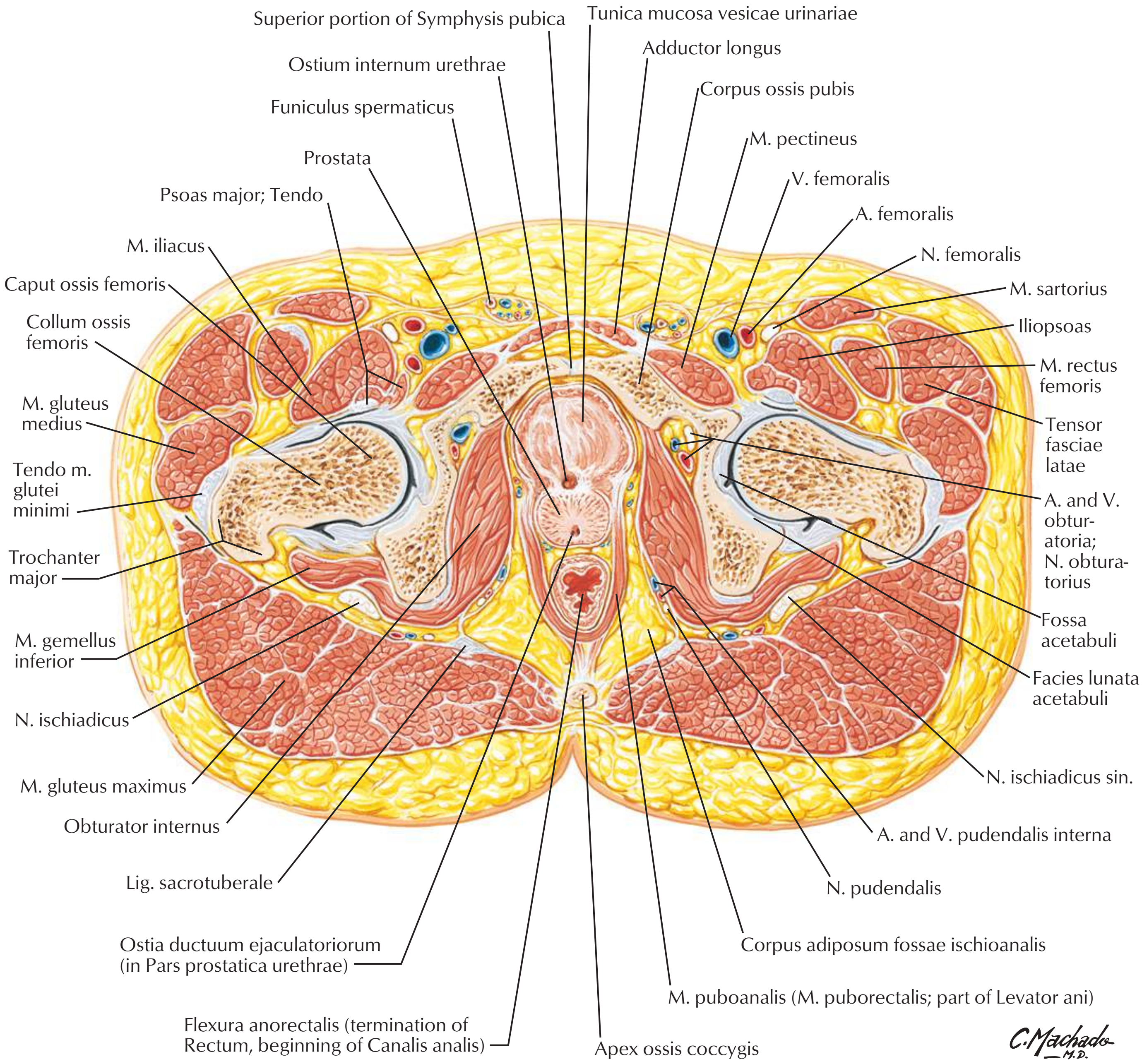

Truncus sympathicus; Ganglion trunci sympathici
N. splanchnicus thoracicus major (T5 -9)
R. communicans griseus
R. communicans albus
N. splanchnicus thoracicus minor
N. splanchnicus thoracicus imus
Nn. splanchnici lumbales
R. communicans griseus
A. testicularis; Plexus testicularis
Ductus (Vas) deferens; Plexus deferentialis
Inferior extent of Peritoneum
Nn. splanchnici pelvici
N. pudendalis
Plexus hypogastricus inferior (Plexus pelvicus)
Plexus vesicalis
Plexus prostaticus
Nn. cavernosi penis
T10
T11
T12
L1
L2
L3
L4
S1
S2
S3
S4
S5
Ganglia coeliaca
Ganglion mesentericum superius
Ganglion aorticorenale sin.
Ganglion renale
Plexus intermesentericus (Plexus aorticus abdominalis)
Ganglion mesentericum inferius
A. testicularis; Plexus testicularis
Plexus hypogastricus superior
Nn. hypogastrici
Ductus (Vas) deferens; Plexus deferentialis
Nn. splanchnici pelvici
Plexus sacralis
N. pudendalis
Nn. dorsales penis
Epididymis
Testis
f. Netter M.D.

Sympathetic fibers		Parasympathetic fibers		Afferent fibers
Preganglionic	━━━	Preganglionic	━━━	━━━
Postganglionic	- - - -	Postganglionic	- - - -	

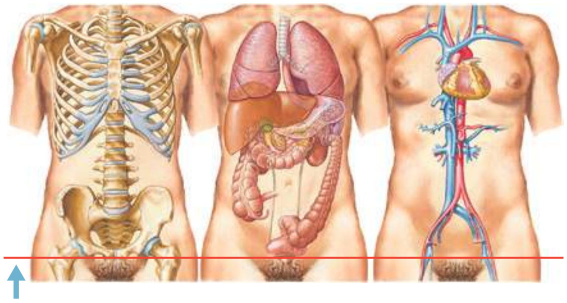
Innervation of Urinary Bladder and Lower Ureter: Schema

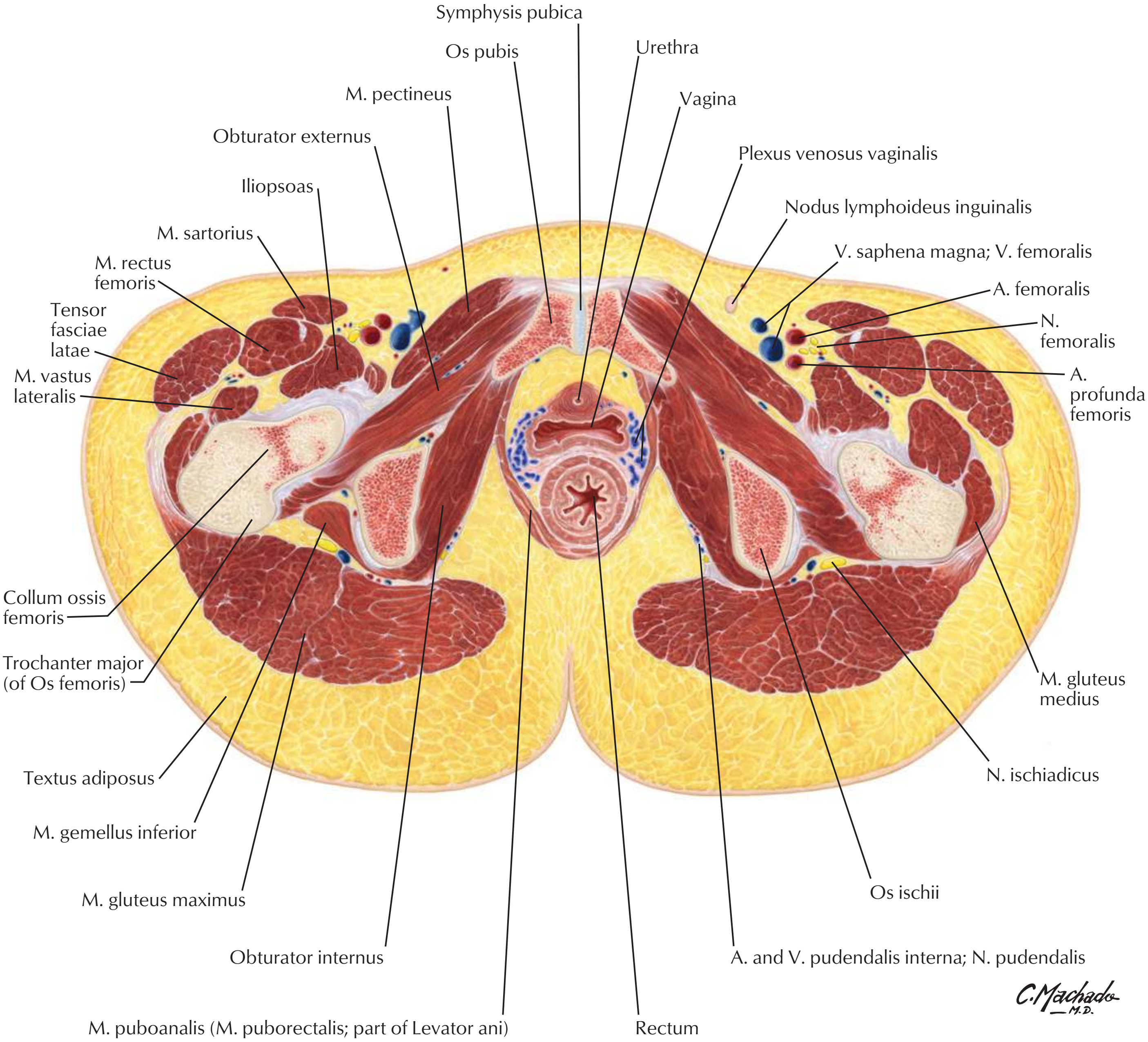

Ganglia sensoria nervorum spinalium
Radix posterior
Radix anterior
albus
griseus
Rr. communicantes
Ganglion renale
Ganglia coeliaca
Ganglion mesentericum superius
Ganglion aorticorenale
A. renalis; Plexus renalis
L1
L2
Plexus intermesentericus (Plexus aorticus abdominalis)
Ganglion mesentericum inferius
Pars lumbalis medullae spinalis
R. anterior n. spinalis L2
Nn. splanchnici lumbales 1 and 2
Plexus hypogastricus superior
Ureter
Nn. hypogastrici
Pars sacralis medullae spinalis
Truncus sympathicus
Nn. splanchnici sacrales (from Pars sacralis trunci sympathici to Plexus hypogastricus inferior)
Plexus hypogastricus inferior (Plexus pelvicus)
Fibrae ascendentes
Fibrae descendentes
Rr. communicantes grisei
Vesica urinaria
S2
S3
S4
N. pudendalis
Plexus sacralis
Nn. splanchnici pelvici
Plexus vesicalis
Plexus prostaticus
Sphincter externus urethrae (superior to Membrana perinei)
M. bulbospongiosus
Sympathetic fibers
Preganglionic
Postganglionic
Parasympathetic fibers
Preganglionic
Postganglionic
Somatic efferent fibers
Afferent fibers




Superior portion of Symphysis pubica
Tunica mucosa vesicae urinariae
Adductor longus
Ostium internum urethrae
Corpus ossis pubis
Funiculus spermaticus
M. pectineus
Prostata
V. femoralis
Psoas major; Tendo
A. femoralis
M. iliacus
N. femoralis
Caput ossis femoris
M. sartorius
Collum ossis femoris
Iliopsoas
M. rectus femoris
M. gluteus medius
Tensor fasciae latae
Tendo m. glutei minimi
A. and V. obturatoria; N. obturatorius
Trochanter major
Fossa acetabuli
M. gemellus inferior
Facies lunata acetabuli
N. ischiadicus
N. ischiadicus sin.
M. gluteus maximus
Obturator internus
A. and V. pudendalis interna
Lig. sacrotuberale
N. pudendalis
Ostia ductuum ejaculatoriorum (in Pars prostatica urethrae)
Corpus adiposum fossae ischioanalis
M. puboanalis (M. puborectalis; part of Levator ani)
Flexura anorectalis (termination of Rectum, beginning of Canalis analis)
Apex ossis coccygis
C. Machado M.D.

Female Pelvis: Cross Section of Vagina and Urethra




Symphysis pubica
Os pubis
Urethra
M. pectineus
Vagina
Obturator externus
Plexus venosus vaginalis
Iliopsoas
Nodus lymphoideus inguinalis
M. sartorius
V. saphena magna; V. femoralis
M. rectus femoris
A. femoralis
Tensor fasciae latae
N. femoralis
M. vastus lateralis
A. profunda femoris
Collum ossis femoris
Trochanter major (of Os femoris)
M. gluteus medius
Textus adiposus
N. ischiadicus
M. gemellus inferior
M. gluteus maximus
Os ischii
Obturator internus
A. and V. pudendalis interna; N. pudendalis
M. puboanalis (M. puborectalis; part of Levator ani)
Rectum
C.Machado M.D.

Structures with High* Clinical Significance

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA SKELETALE		
Symphysis pubica	Palpable landmark used to obtain pelvic measurements (e.g., conjugata diagonalis) that are used to assess adequacy of pelvis for childbirth; during prenatal examinations, used for estimating fetal growth (symphysis–fundal height measurement)	336
Spina ischiadica	Palpable landmark used to estimate distantia interspinosa for childbirth and to locate N. pudendalis for pudendal nerve block	336
Tuber ischiadicum	Palpable landmark used to estimate width of apertura pelvis inferior (pelvic outlet) for childbirth	336
R. superior ossis pubis	Often fractured by compression of pelvis in anteroposterior plane by crush injury	338
Spina ischiadica	Pudendal nerve blocks target N. pudendalis at its entry into foramen ischiadicum minus, approximately 1 cm inferior and medial to attachment of Lig. sacrospinale on spina ischiadica	384, 393
SYSTEMA MUSCULARE		
Diaphragma pelvis (Levator ani and M. coccygeus)	Provides support to urethrovesical angle, helping to maintain urinary continence; weakness or injury during childbirth can lead to stress incontinence in women	340, 351
Fascia endopelvica	Weakness or tearing of Ligg. fasciae endopelvicae (e.g., Ligg. pubovesicale or cardinale) facilitates prolapse of pelvic organs	350, 353
Corpus perineale	Tearing of corpus perineale can lead to prolapse of pelvic organs or loss of continence	360
SYSTEMA DIGESTORIUM		
Rectum	Examined by digital rectal examination to detect internal hemorrhoids, fecal impaction, and rectal cancer; provides access to colon for colonoscopy	373, 375
Peritoneum	Common site for metastatic spread of ovarian cancer via peritoneal fluid in peritoneal cavity	344, 345
SYSTEMA URINARIUM		
Vesica urinaria	Landmark used to identify structures of pelvis during ultrasound examination	349, 350
Ureter	May be injured during hysterectomy because of its close relationship to A. uterina	346, 347
SYSTEMATA GENITALIA		
Excavatio rectouterina (Douglasi)	Region examined with ultrasound to detect presence of abdominal or pelvic fluid; common site of ectopic pregnancy; may be accessed via pars posterior fornicis vaginae	345, 346
Uterus	Palpated during prenatal examinations to assess fetal growth and during pelvic examinations; examined with ultrasound to detect abnormalities (e.g., fibroids)	345, 355
Cervix uteri	Epithelium of transformation zone of cervix is prone to dysplasia and malignancy; cells are sampled from this region during pap examination	353, 355
Vagina	Pars posterior fornicis vaginae allows access to excavatio rectouterina (Douglasi)	345
Prostata	Prone to benign hypertrophy with aging; prostate cancer is second most common cancer in men	349, 366

Table 6.1

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMATA GENITALIA—Continued		
Ovarium	Examined with ultrasound to identify cysts or for oocyte collection	344, 355
Ductus (Vas) deferens	Ligated during vasectomy for sterilization in males	349, 369
SYSTEMA NERVOSUM		
N. pudendalis	Pudendal block is performed to anesthetize perineum for childbirth or minor surgical procedures in perineum	395
N. rectalis inferior	Anesthetized in fossa ischioanalis for surgical excision of external hemorrhoids	393
Plexus prostaticus; Nn. cavernosi penis	Disruption of these nerves during procedures (e.g., prostate surgery) can produce inability to achieve erection	392
SYSTEMA CARDIOVASCULARE		
Plexus (venosus) pampiniformis	Dilation can cause testicular varicocele, most commonly on left side due to differences in drainage pattern of Vv. gonadales (dextra and sinistra)	369
A. uterina	Ligated or cauterized during hysterectomy; embolization is performed to treat uterine fibroids	382, 386
Aa. penis (profunda and dorsalis); Corpora cavernosa	Blockage or loss of vascular smooth muscle function can lead to erectile dysfunction	387
V. iliaca interna	Provide communication between plexus venosus prostaticus and venae columnae vertebralis, which is route of spread for prostate cancer	385
Vv. rectales (superior, mediae, and inferiores)	Portal hypertension may cause dilated Vv. rectales (hemorrhoids) because portosystemic anastomoses develop between Vv. rectales	381, 299
SYSTEMA LYMPHATICUM		
Nodi lymphoidei pelvis and paraaortici (aortici laterales, postaortici)	Spread of ovarian cancer cells via venous drainage to V. cava inferior and lungs, and via lymphatics	388
Nodi lymphoidei paraaortici and tracheobronchiales	Prostate cancer cells may spread via lymphatics	390
Nodi lymphoidei preaortici and paraaortici (aortici laterales, postaortici)	Receive lymphatic drainage from ovary, tuba uterina, and fundus uteri in women and from testis in men; cancers in these organs may therefore spread to retroperitoneum	388, 390
Nodi lymphoidei pelvis	Lymph node sampling or dissection is performed to assess spread of gynecologic malignancies	388

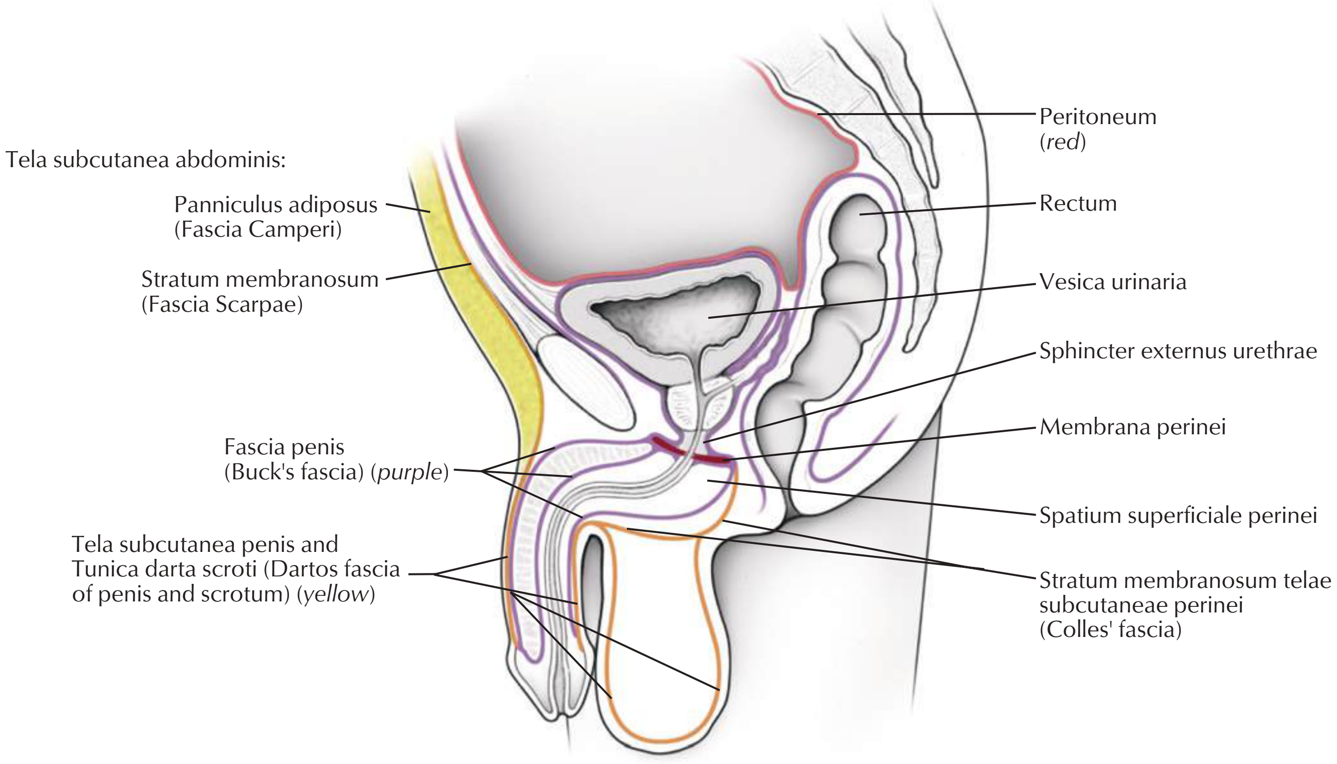
*Selections were based largely on clinical data as well as commonly covered clinical correlations in gross anatomy courses.

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. bulbospongiosus	Mm. perinei	*Male*: Raphe (mediana) perinei; Bulbus penis; Corpus perineale *Female*: Corpus perineale	*Male*: Membrana perinei; Corpus cavernosum penis; Bulbus penis *Female*: Dorsum clitoridis; Membrana perinei; Bulbus vestibuli; Arcus pubicus	R. profundus n. perinealis from n. pudendalis	A. pudendalis interna and its branch (A. perinealis)	*Male*: compresses bulb of penis, forces blood into body of penis during erection, removes urine from urethra and semen during ejaculation *Female*: constricts vaginal orifice, assists in expressing secretions of greater vestibular gland, forces blood into body of clitoris
M. coccygeus	Diaphragma pelvis	Spina ischiadica; Lig. sacrospinale	Pars inferior ossis sacri; Os coccygis	Rr. anteriores nn. sacralium inferiorum	A. glutea inferior	Supports pelvic viscera, draws coccyx forward
Compressor urethrae (female only)	Mm. perinei	Ramus ischiopubicus	Anterior aspect of urethra	Rr. perineales n. pudendalis	R. perinealis a. pudendalis internae	Sphincter of urethra
Cremaster	Funiculus spermaticus	Lower edge of m. obliquus internus abdominis; Middle of lig. inguinale	Tuberculum pubicum; Crista pubica	R. genitalis n. genitofemoralis	R. cremastericus a. epigastricae inferioris	Retracts testicle
M. iliacus	Iliopsoas	Superior 2/3 of fossa iliaca; Ala ossis sacri; Ligg. sacroiliaca anteriora	Trochanter minor ossis femoris and corpus ossis femoris inferior to it, to tendo psoae majoris	N. femoralis	Rr. iliaci a. iliolumbalis	Flexes thigh at hips and stabilizes hip joint, acts with psoas major
M. ischiocavernosus	Mm. perinei	Inferior internal surface of ramus ischiopubicus; Tuber ischiadicum	Crus penis/clitoridis	R. profundus n. perinealis from n. pudendalis	A. pudendalis interna and its branch (A. perinealis)	Forces blood into body of penis and clitoris during erection
Levator ani (Mm. iliococcygeus, pubococcygeus, and puboanalis)	Diaphragma pelvis	Corpus ossis pubis; Arcus tendineus levatoris ani (on Fascia obturatoria); Spina ischiadica	Corpus perineale; Os coccygis; Corpus anococcygeum; Walls of prostata or vagina, rectum, and canalis analis	Rr. anteriores nn. sacralium inferiorum; N. perinealis	A. glutea inferior; A. pudendalis interna and its branches (rectalis inferior and perinealis)	Supports pelvic viscera, raises pelvic floor
Obturator internus	Mm. glutei	Facies pelvica membranae obturatoriae and surrounding bone	Medial surface of trochanter major ossis femoris	N. obturatoris interni	Aa. pudendalis interna and obturatoria	Laterally rotates extended thigh, abducts flexed thigh at hip
M. piriformis	Mm. glutei	Facies anterior ossis sacri (segments 2–4); Lig. sacrotuberale	Superior border of trochanter major ossis femoris	Rr. anteriores nn. spinalium L5, S1, S2	Aa. gluteae superior and inferior, and pudendalis interna	Laterally rotates extended thigh, abducts flexed thigh at hip
Sphincter externus ani	Mm. perinei	Apex osis coccygis; Corpus anococcygeum	Deeper fibers surround canalis analis, attach posteriorly to os coccygis and anteriorly to corpus perineale	Rr. perineales and rectales inferiores of n. pudendalis	Aa. rectalis inferior and perinealis	Closes anal orifice

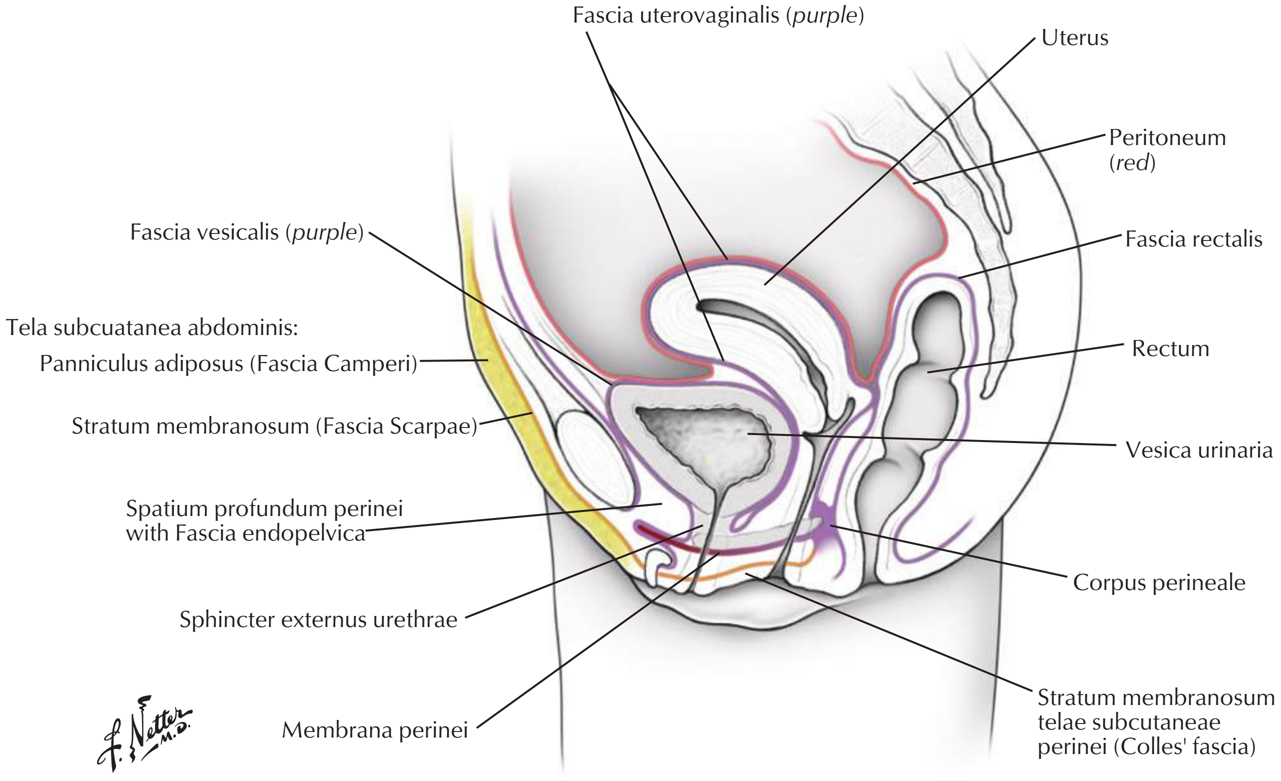
Variations in spinal nerve contributions to the innervation of muscles, their arterial supply, their attachments, and their actions are common themes in human anatomy. Therefore, expect differences between texts and realize that anatomic variation is normal.

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. transversus profundus perinei	Mm. perinei	Inner surface of ramus ossis ischii	*Male*: Corpus perineale *Female*: sides of vagina	Rr. perineales n. pudendalis	R. perinealis a. pudendalis internae	Stabilizes perineal body, supports prostate gland/ vagina
M. transversus superficialis perinei	Mm. perinei	Ramus ossis ischii; Tuber ischiadicum	Corpus perineale	Rr. perineales n. pudendalis	R. perinealis a. pudendalis internae	Stabilizes central tendon
Sphincter urethrae	Mm. perinei	External fibers from junction of ramus inferior ossis pubis and ramus ossis ischii and adjacent fascia. Internal fibers pass medially to surround pars membranacea urethrae	*Male*: Raphe (mediana) perinei in front and behind urethra *Female*: encloses urethra, attaches to sides of vagina	Rr. perineales n. pudendalis	R. perinealis a. pudendalis internae	Compresses urethra at end of micturition; in female also compresses distal vagina
Sphincter urethrovaginalis (female only)	Mm. perinei	Corpus perineale	Passes forward and anteriorly around urethra	Rr. perineales n. pudendalis	R. perinealis a. pudendalis internae	Sphincter of urethra and vagina

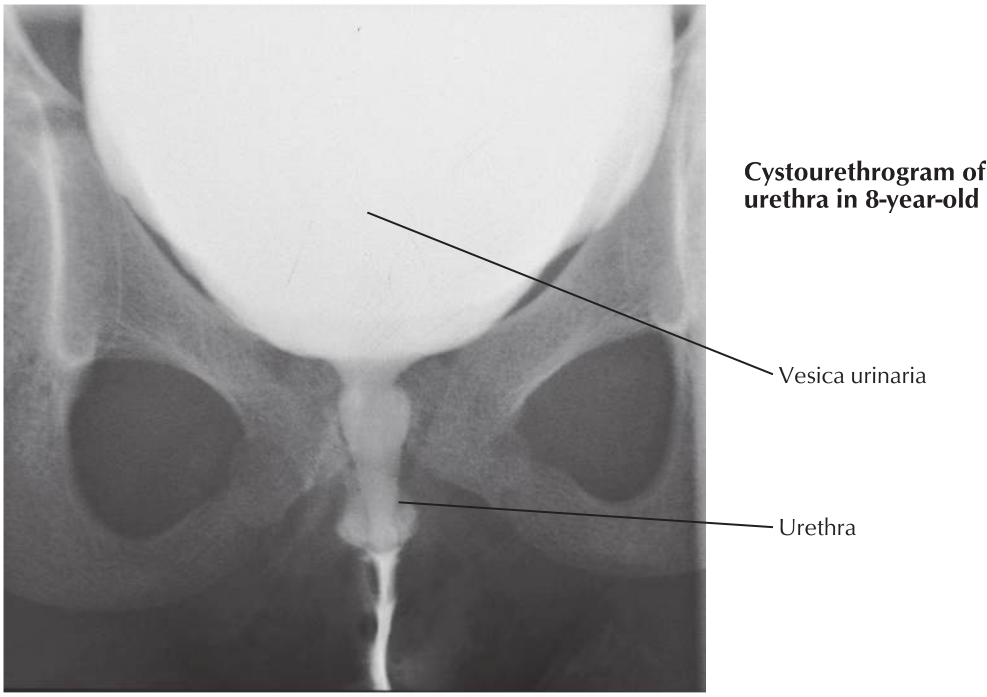
Fasciae of Male and Female Pelvis and Perineum


Tela subcutanea abdominis:
Panniculus adiposus (Fascia Camperi)
Stratum membranosum (Fascia Scarpae)
Fascia penis (Buck's fascia) (*purple*)
Tela subcutanea penis and Tunica darta scroti (Dartos fascia of penis and scrotum) (*yellow*)
Peritoneum (*red*)
Rectum
Vesica urinaria
Sphincter externus urethrae
Membrana perinei
Spatium superficiale perinei
Stratum membranosum telae subcutaneae perinei (Colles' fascia)

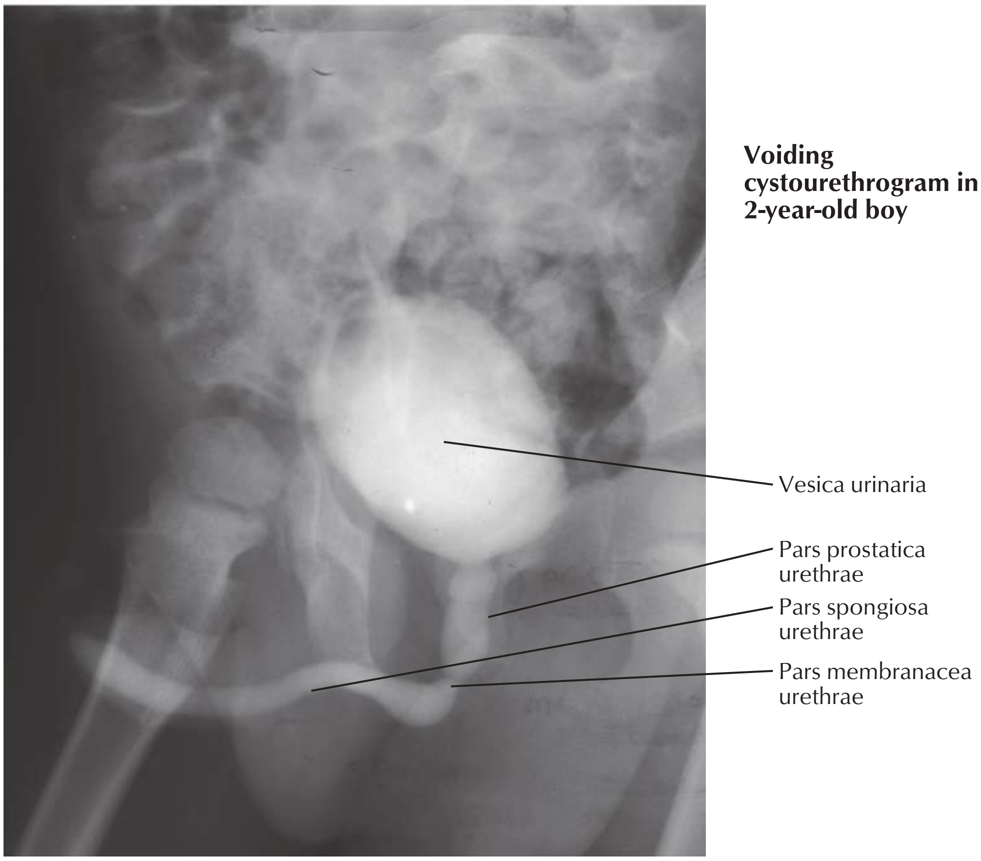
Median section of male


Fascia uterovaginalis (*purple*)
Uterus
Peritoneum (*red*)
Fascia rectalis
Fascia vesicalis (*purple*)
Tela subcuatanea abdominis:
Panniculus adiposus (Fascia Camperi)
Stratum membranosum (Fascia Scarpae)
Rectum
Vesica urinaria
Spatium profundum perinei with Fascia endopelvica
Corpus perineale
Sphincter externus urethrae
Membrana perinei
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
F. Netter M.D.

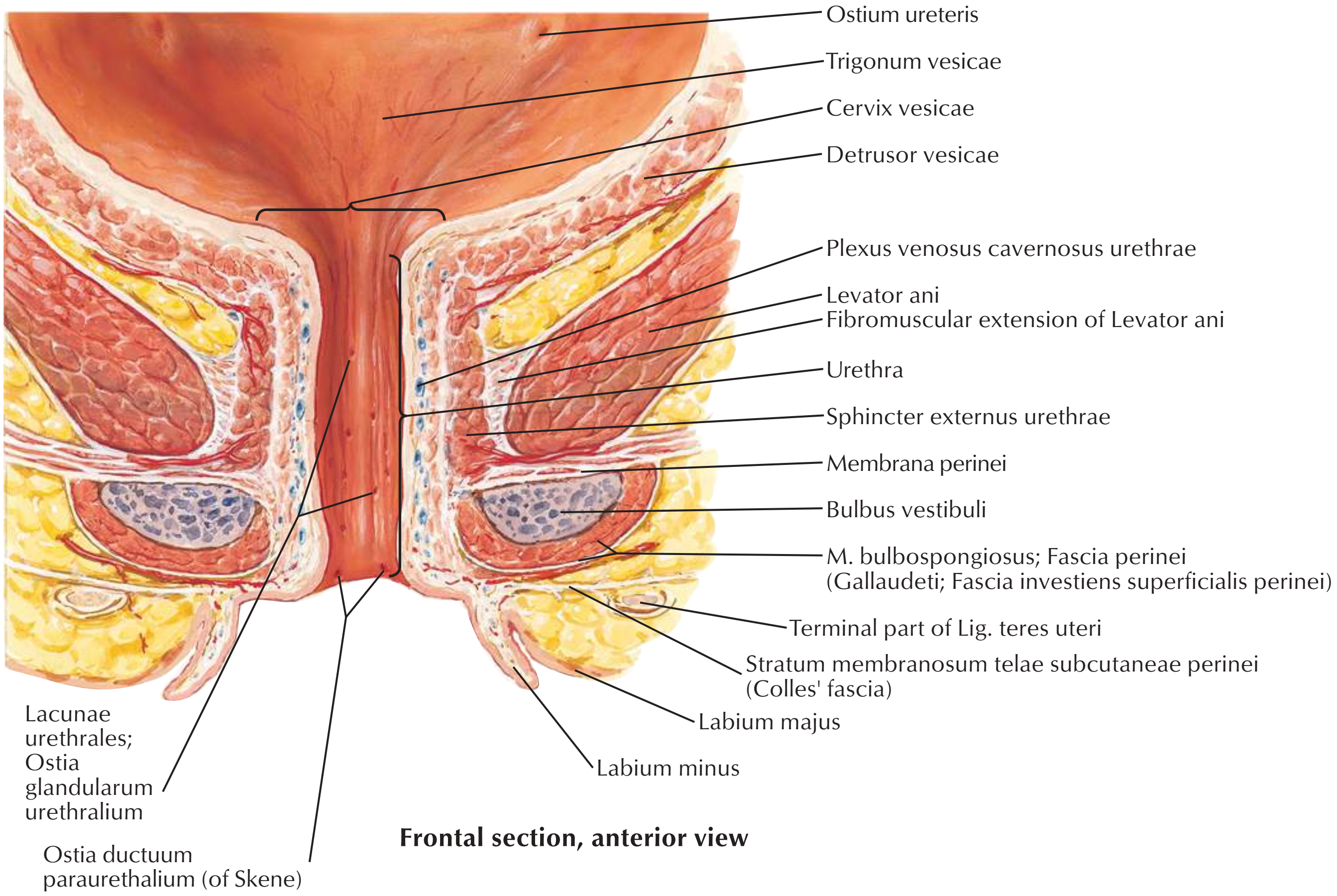
Median section of female


Vesica urinaria
Urethra

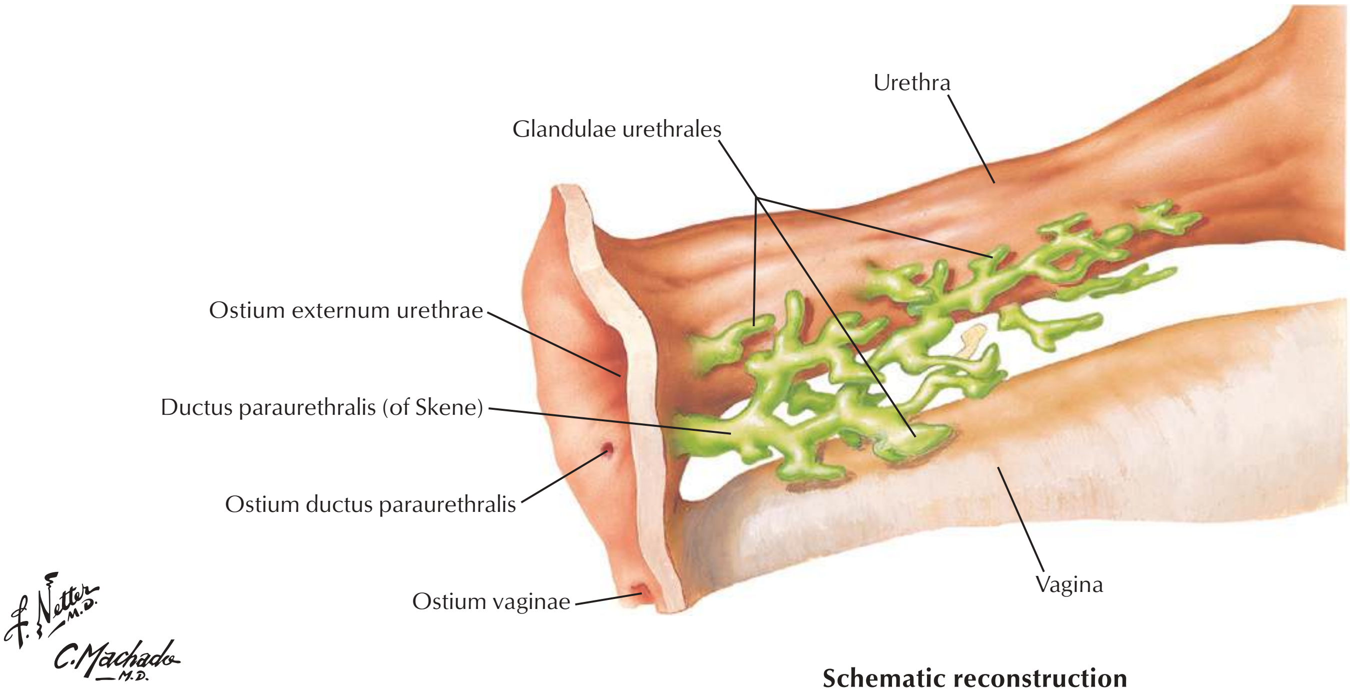
Cystourethrogram of urethra in 8-year-old girl


Vesica urinaria
Pars prostatica urethrae
Pars spongiosa urethrae
Pars membranacea urethrae

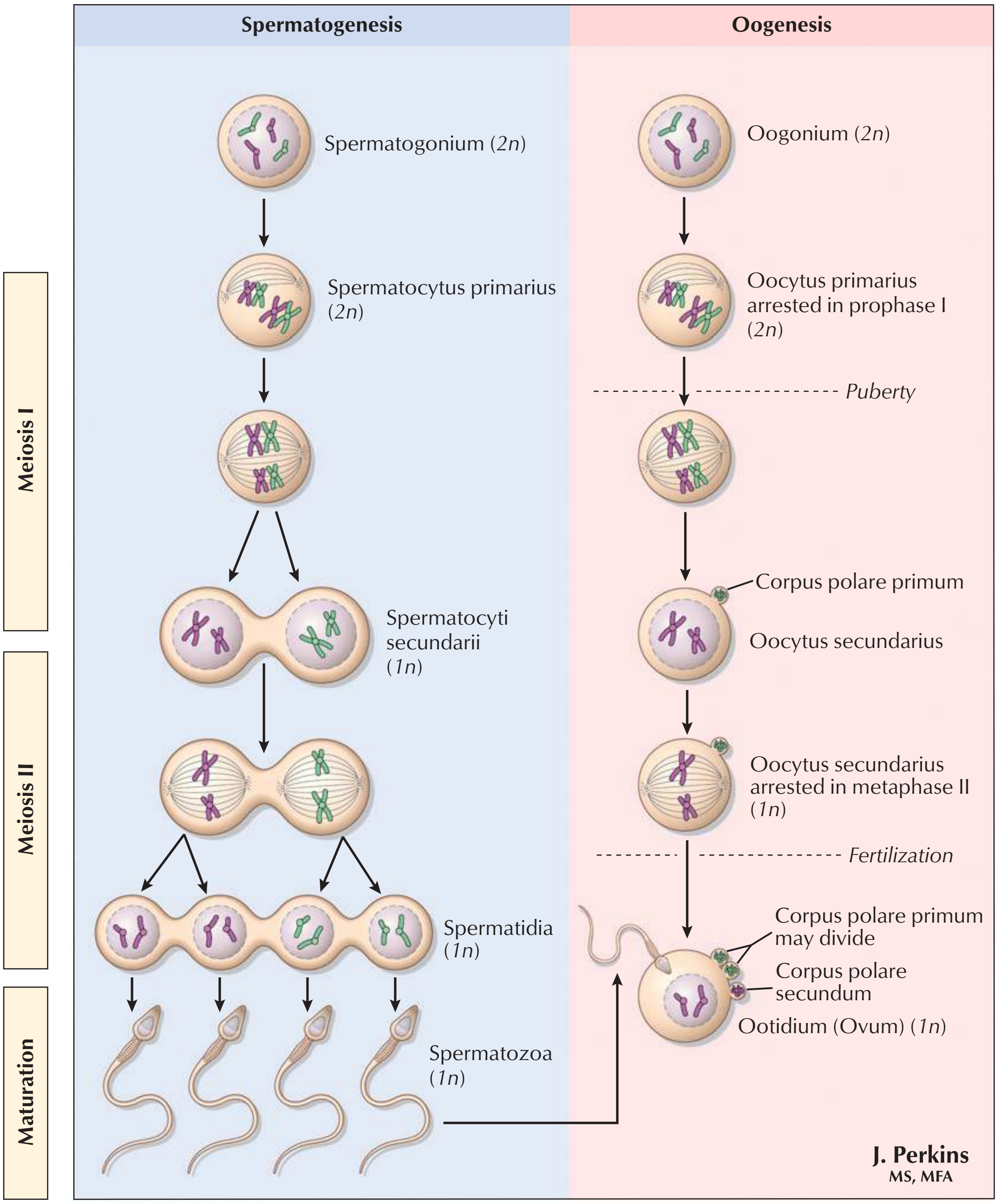
Voiding cystourethrogram in 2-year-old boy


Ostium ureteris
Trigonum vesicae
Cervix vesicae
Detrusor vesicae
Plexus venosus cavernosus urethrae
Levator ani
Fibromuscular extension of Levator ani
Urethra
Sphincter externus urethrae
Membrana perinei
Bulbus vestibuli
M. bulbospongiosus; Fascia perinei (Gallaudeti; Fascia investiens superficialis perinei)
Terminal part of Lig. teres uteri
Stratum membranosum telae subcutaneae perinei (Colles' fascia)
Labium majus
Labium minus
Lacunae urethrales; Ostia glandularum urethralium
Ostia ductuum paraurethalium (of Skene)

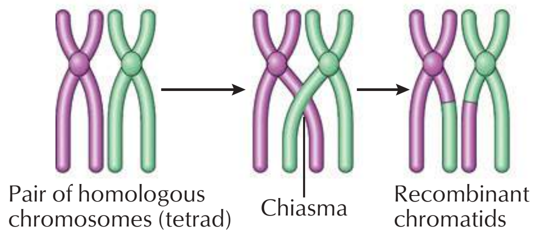
Frontal section, anterior view


Urethra
Glandulae urethrales
Ostium externum urethrae
Ductus paraurethralis (of Skene)
Ostium ductus paraurethralis
Ostium vaginae
Vagina
F. Netter M.D.
C. Machado M.D.

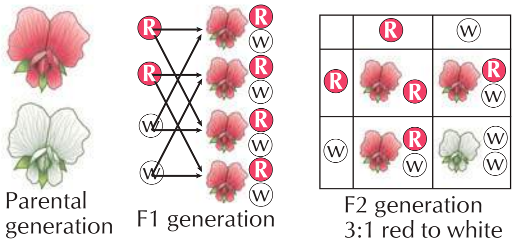
Schematic reconstruction

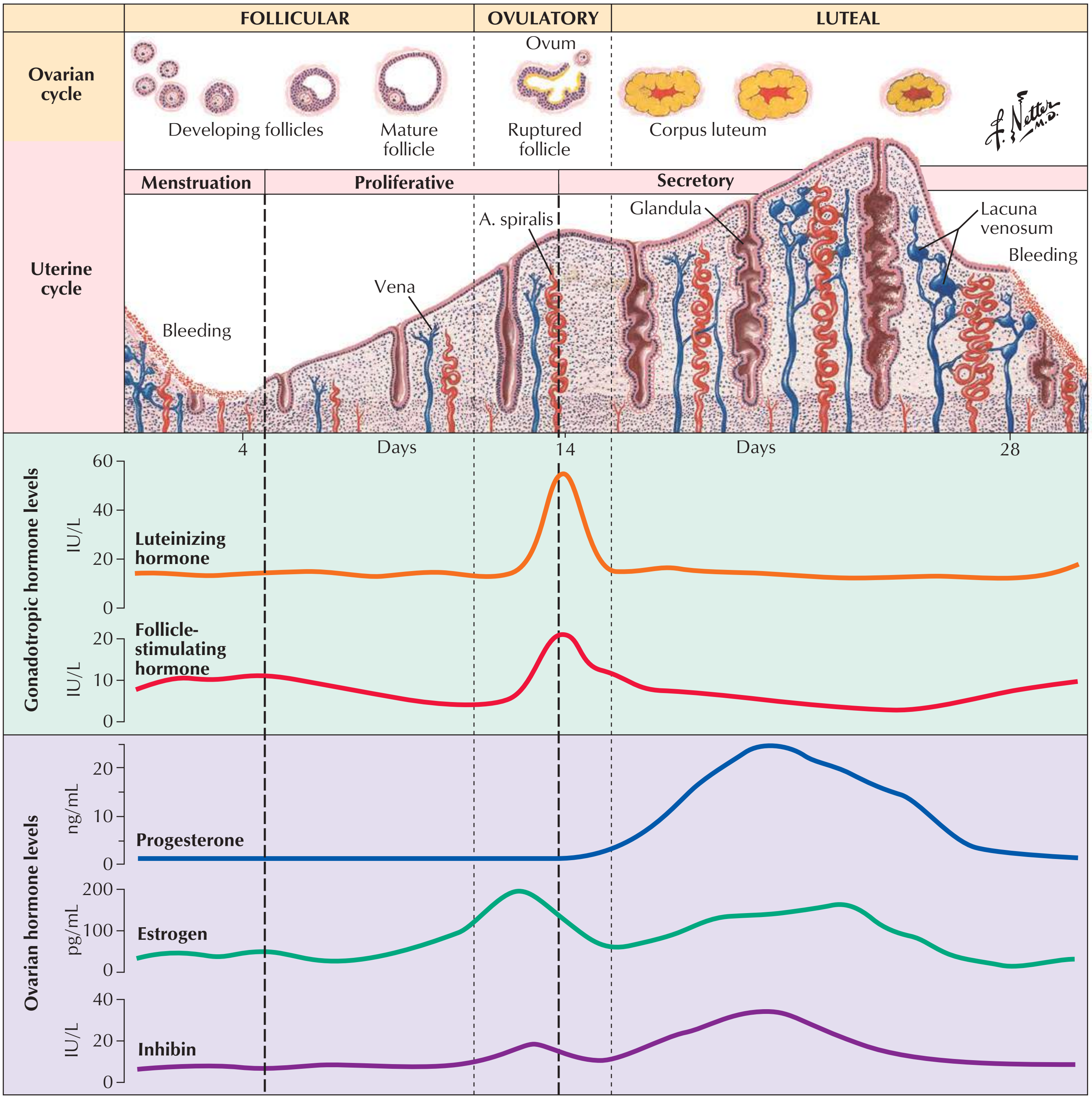

Spermatogenesis
Oogenesis
Meiosis I
Meiosis II
Maturation
Spermatogonium (2*n*)
Spermatocytus primarius (2*n*)
Spermatocyti secundarii (1*n*)
Spermatidia (1*n*)
Spermatozoa (1*n*)
Oogonium (2*n*)
Oocytus primarius arrested in prophase I (2*n*)
Puberty
Corpus polare primum
Oocytus secundarius
Oocytus secundarius arrested in metaphase II (1*n*)
Fertilization
Corpus polare primum may divide
Corpus polare secundum
Ootidium (Ovum) (1*n*)
J. Perkins
MS, MFA

Crossing over

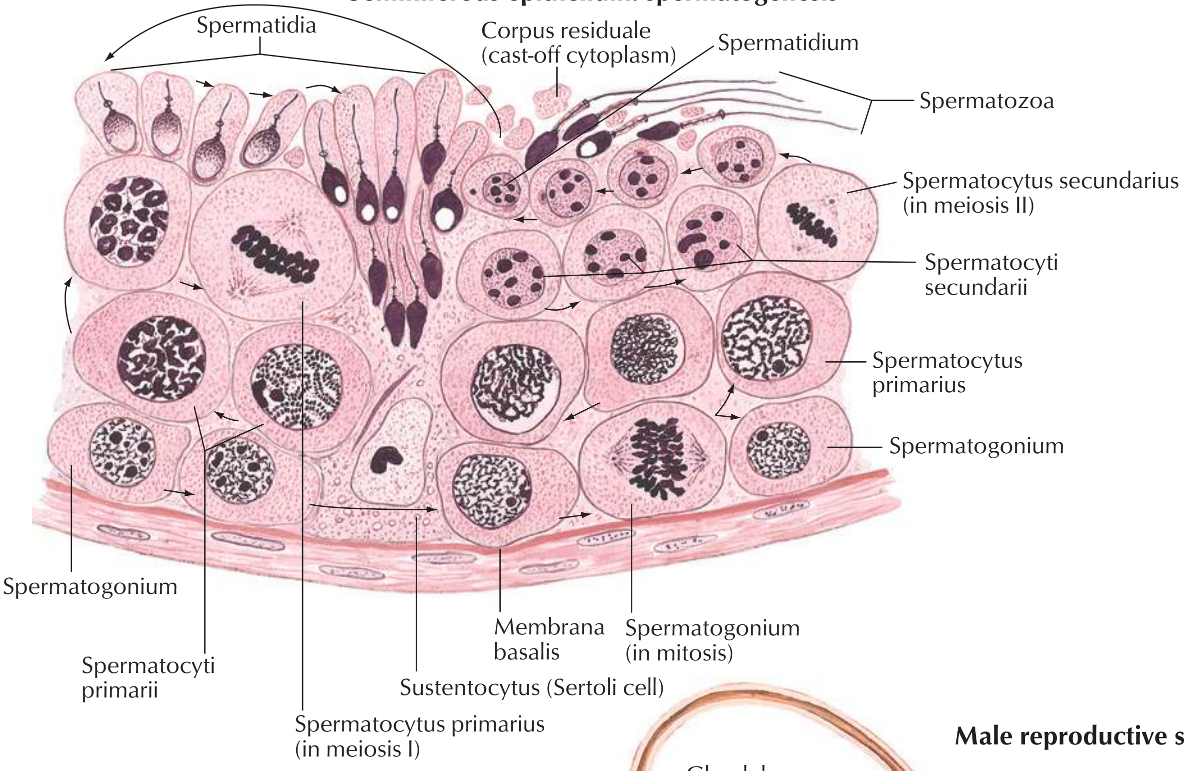

Pair of homologous chromosomes (tetrad)
Chiasma
Recombinant chromatids

Mendelian inheritance

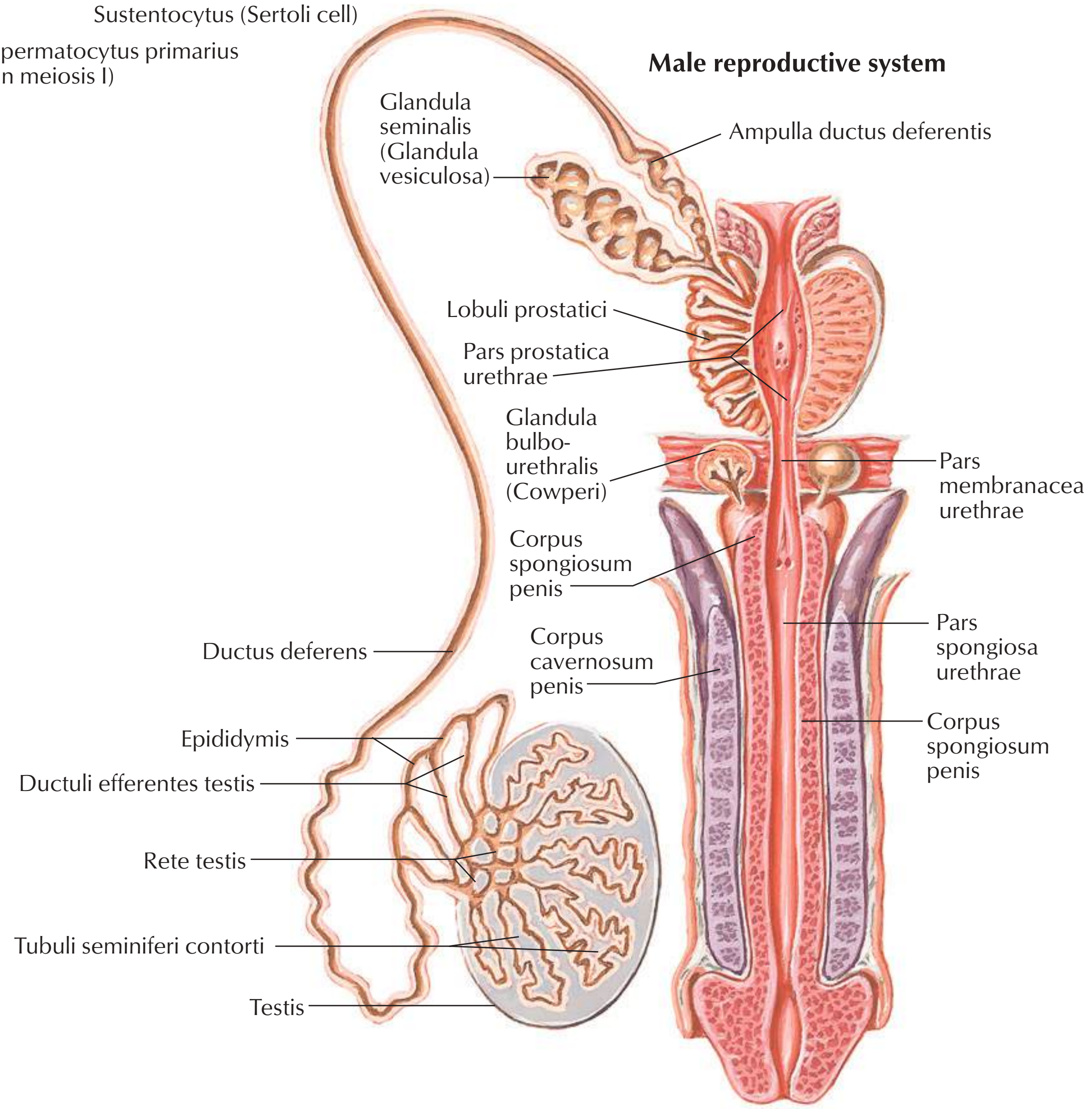

Parental generation
R
R
W
W
R
W
R
W
R
W
R
W
F1 generation
R
W
R
R
R
R
W
W
R
W
W
W
F2 generation
3:1 red to white


FOLLICULAR
OVULATORY
LUTEAL
Ovarian cycle
Ovum
Developing follicles
Mature follicle
Ruptured follicle
Corpus luteum
Uterine cycle
Menstruation
Proliferative
Secretory
Glandula
Lacuna venosum
Bleeding
A. spiralis
Vena
Bleeding
4
Days
14
Days
28
Gonadotropic hormone levels
IU/L
60
40
20
0
Luteinizing hormone
IU/L
20
10
0
Follicle-stimulating hormone
Ovarian hormone levels
ng/mL
20
10
0
Progesterone
pg/mL
200
100
0
Estrogen
IU/L
40
20
0
Inhibin

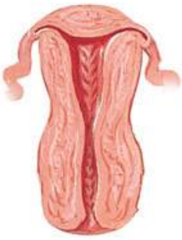
Seminiferous epithelium: spermatogenesis


Spermatidia
Corpus residuale (cast-off cytoplasm)
Spermatidium
Spermatozoa
Spermatocytus secundarius (in meiosis II)
Spermatocyti secundarii
Spermatocytus primarius
Spermatogonium
Spermatogonium
Spermatocyti primarii
Spermatocytus primarius (in meiosis I)
Sustentocytus (Sertoli cell)
Membrana basalis
Spermatogonium (in mitosis)

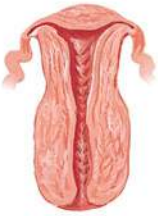
Male reproductive system


Glandula seminalis (Glandula vesiculosa)
Ampulla ductus deferentis
Lobuli prostatici
Pars prostatica urethrae
Glandula bulbo-urethralis (Cowperi)
Pars membranacea urethrae
Corpus spongiosum penis
Corpus cavernosum penis
Pars spongiosa urethrae
Corpus spongiosum penis
Ductus deferens
Epididymis
Ductuli efferentes testis
Rete testis
Tubuli seminiferi contorti
Testis

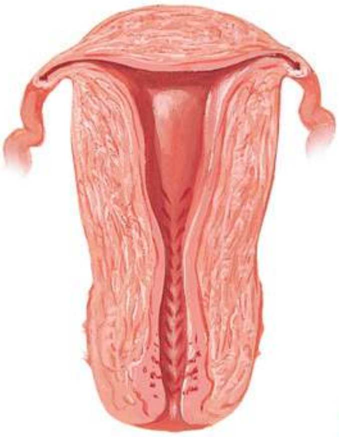
F. Netter M.D.
JOHN A. CRAIG MD



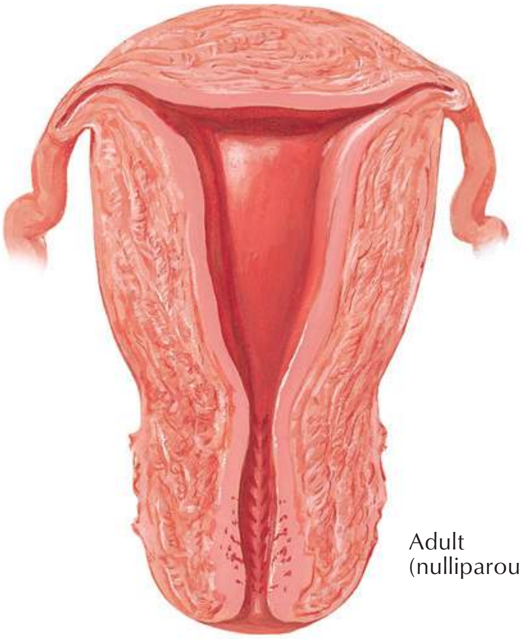
Newborn



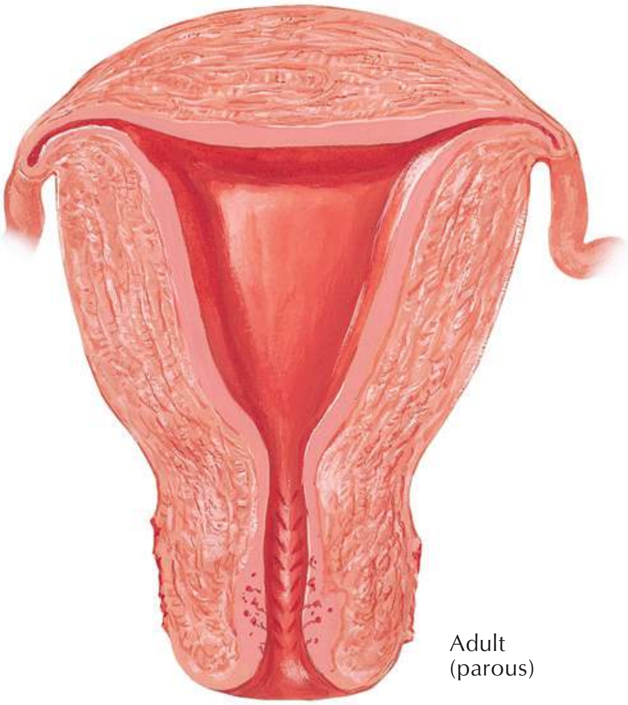
4 years



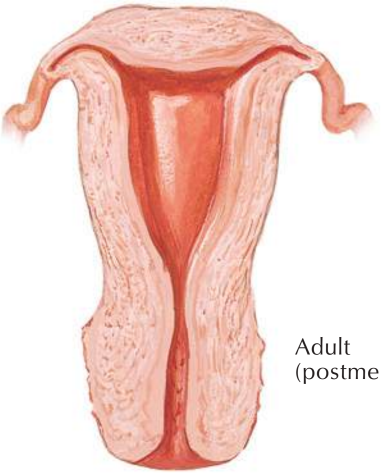
Puberty



Adult
(nulliparous)



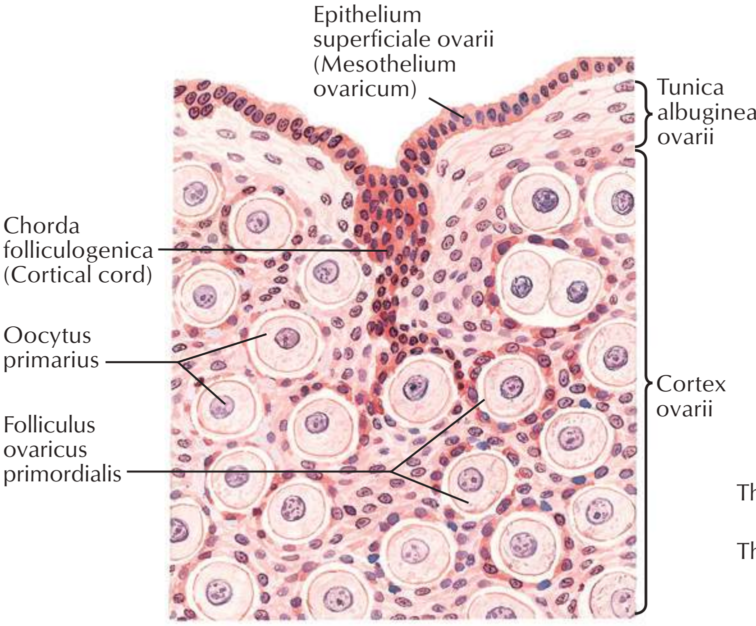
Adult
(parous)



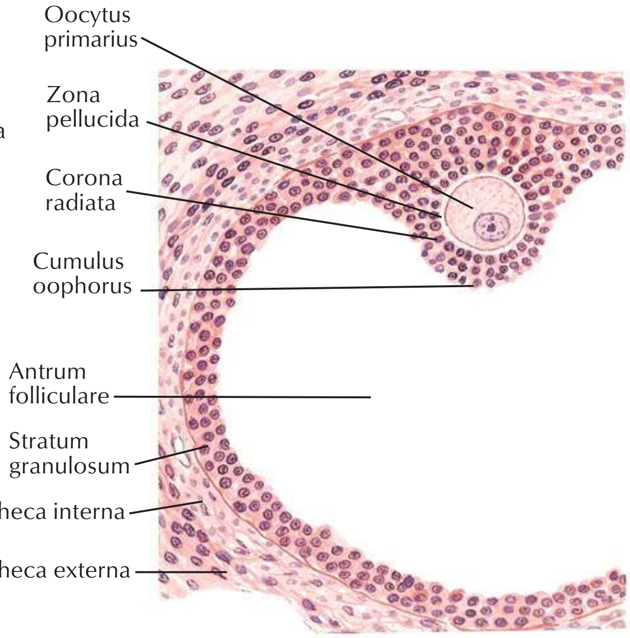
Adult
(postmenopausal)

F. Netter M.D.

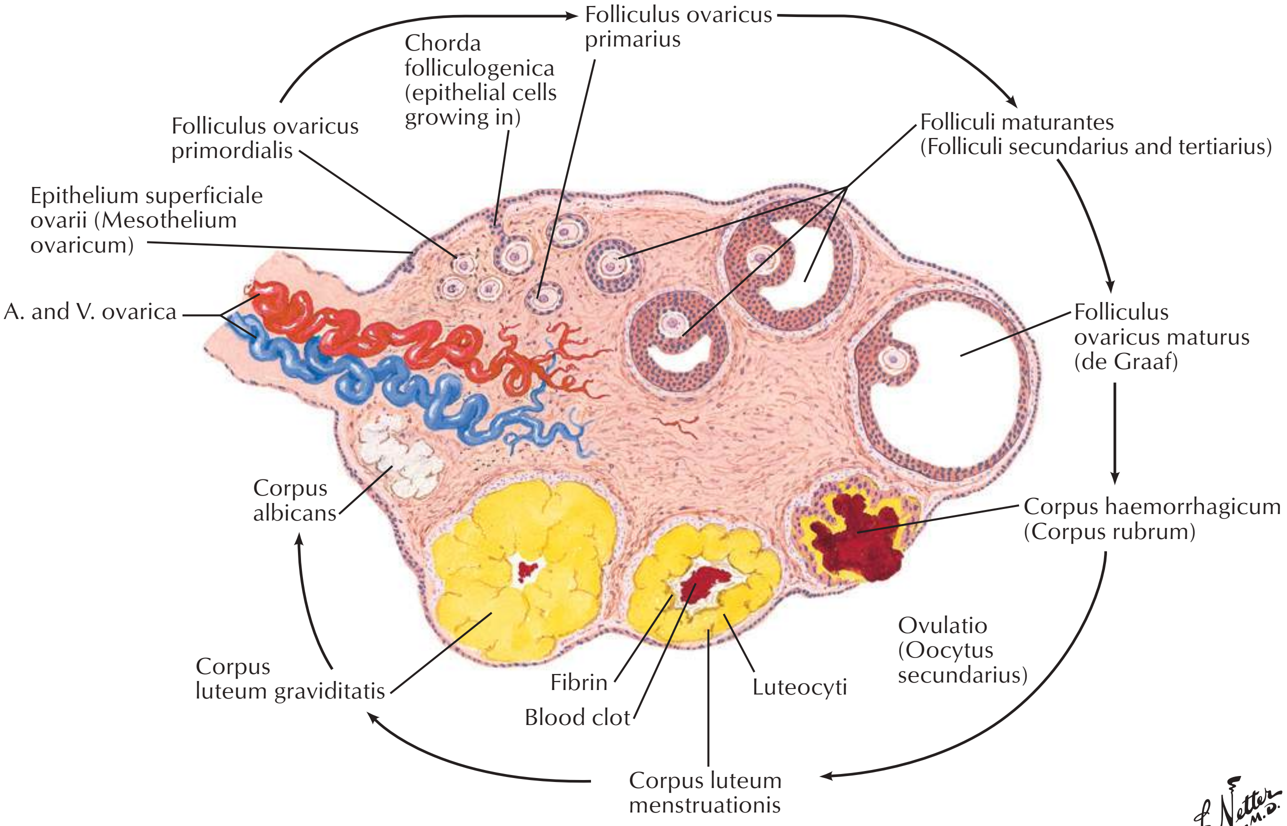
Ovary, Oocytes, and Follicles


Epithelium superficiale ovarii (Mesothelium ovaricum)
Tunica albuginea ovarii
Chorda folliculogenica (Cortical cord)
Oocytus primarius
Folliculus ovaricus primordialis
Cortex ovarii

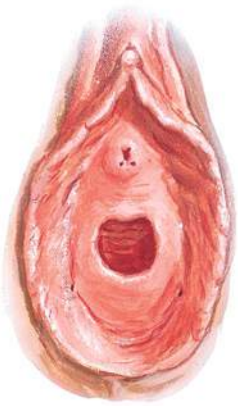
Infant ovary


Oocytus primarius
Zona pellucida
Corona radiata
Cumulus oophorus
Antrum folliculare
Stratum granulosum
Theca interna
Theca externa

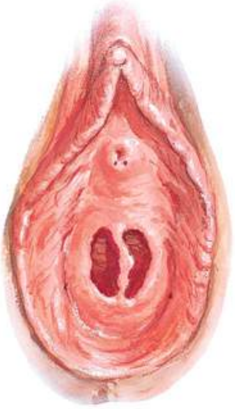
Maturing follicle


Folliculus ovaricus primarius
Chorda folliculogenica (epithelial cells growing in)
Folliculus ovaricus primordialis
Folliculi maturantes (Folliculi secundarius and tertiarius)
Epithelium superficiale ovarii (Mesothelium ovaricum)
A. and V. ovarica
Folliculus ovaricus maturus (de Graaf)
Corpus albicans
Corpus haemorrhagicum (Corpus rubrum)
Ovulatio (Oocytus secundarius)
Corpus luteum graviditatis
Fibrin
Blood clot
Luteocyti
Corpus luteum menstruationis

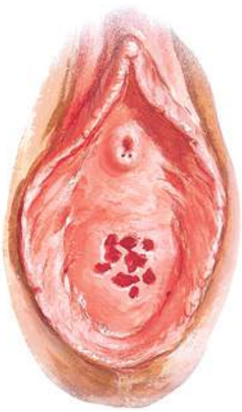
Follicular and luteal stages



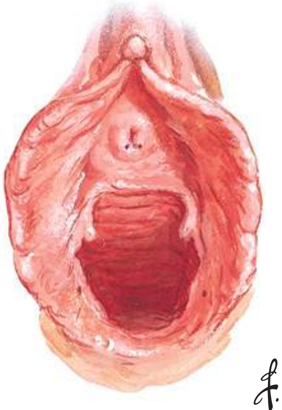
Annular hymen



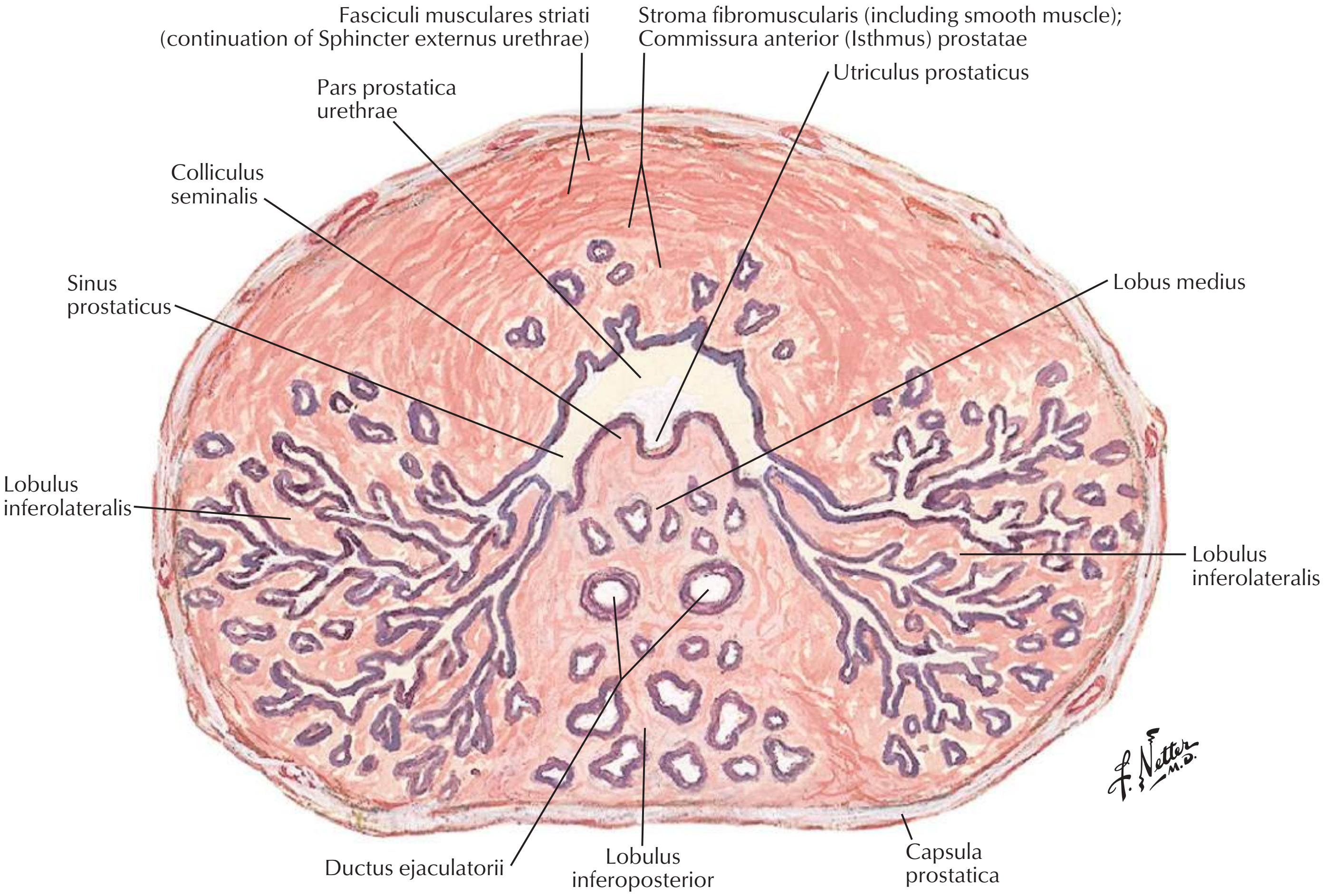
Septate hymen

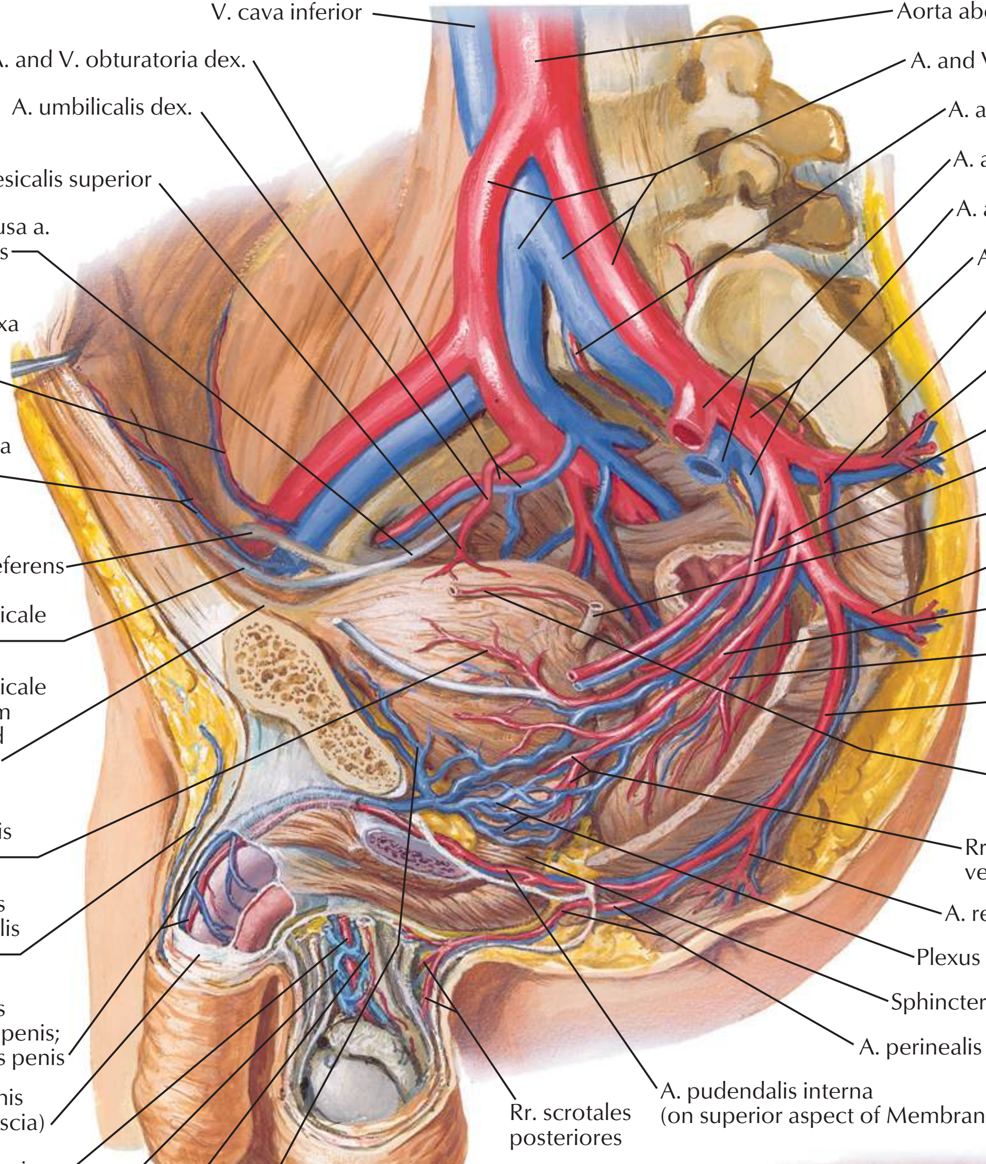


Cribriform hymen



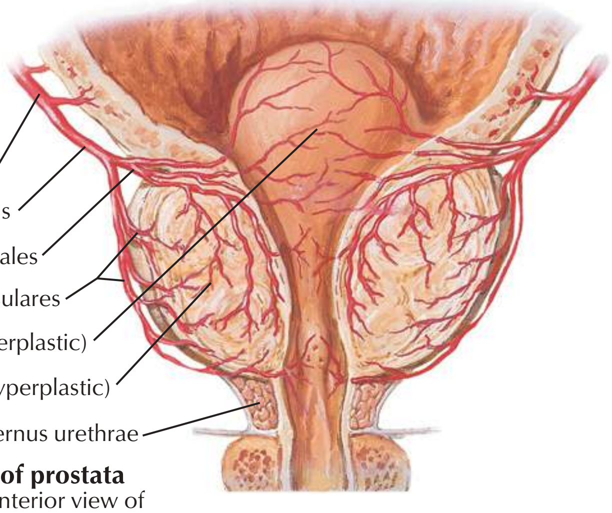
Parous introitus


Fasciculi musculares striati
(continuation of Sphincter externus urethrae)
Stroma fibromuscularis (including smooth muscle);
Commissura anterior (Isthmus) prostatae
Utriculus prostaticus
Pars prostatica urethrae
Colliculus seminalis
Sinus prostaticus
Lobus medius
Lobulus inferolateralis
Lobulus inferolateralis
Ductus ejaculatorii
Lobulus inferoposterior
Capsula prostatica



Left paramedian section: lateral view

V. cava inferior
A. and V. obturatoria dex.
A. umbilicalis dex.
A. vesicalis superior
Pars occlusa a. umbilicalis
A. and V. circumflexa profunda ilium
A. and V. epigastrica inferior
Ductus deferens
Lig. umbilicale mediale
Lig. umbilicale medianum (occluded Urachus)
A. vesicalis superior
V. dorsalis superficialis penis
V. dorsalis profunda penis; A. dorsalis penis
Fascia penis (Buck's fascia)
A. testicularis
Plexus (venosus) pampiniformis
A. ductus deferentis
Plexus venosus vesicalis (in Spatium retropubicum)
Aorta abdominalis
A. and V. iliaca communis
A. and V. sacralis mediana
A. and V. iliaca externa (*cut*)
A. and V. iliaca interna
A. iliolumbalis
A. sacralis lateralis
A. glutea superior
A. obturatoria
A. umbilicalis
Ureter (*cut*)
A. glutea inferior
A. vesicalis inferior
A. rectalis media
A. pudendalis interna
Ductus deferens; A. ductus deferentis
Rr. prostatici a. vesicalis inferioris
A. rectalis inferior
Plexus venosus prostaticus
Sphincter externus urethrae
A. perinealis
A. pudendalis interna (on superior aspect of Membrana perinei)
Rr. scrotales posteriores
F. Netter M.D.
C. Machado M.D.



A. vesicalis inferior
R. prostaticus
Rr. urethrales
Rr. capsulares
Lobus medius (hyperplastic)
Lobus lateralis (hyperplastic)
Sphincter externus urethrae

Arterial supply of prostata
(frontal section, anterior view of specimen with benign hyperplasia)

UPPER LIMB

7

Surface Anatomy 402
Cutaneous Anatomy 403-407
Shoulder and Axilla 408-420
Arm 421-425
Elbow and Forearm 426-441
Wrist and Hand 442-461
Neurovasculature 462-469
Regional Imaging 470
Structures with High Clinical Significance Tables 7.1-7.2
Muscle Tables Tables 7.3-7.6
Electronic Bonus Plates BP99-BP106

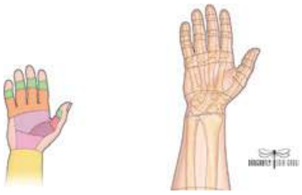
ELECTRONIC BONUS PLATES

BP99 Veins of Upper Limb

BP100 Arteries of Arm and Proximal Forearm

BP101 Arteries of Forearm and Hand

BP102 Ligaments of Wrist

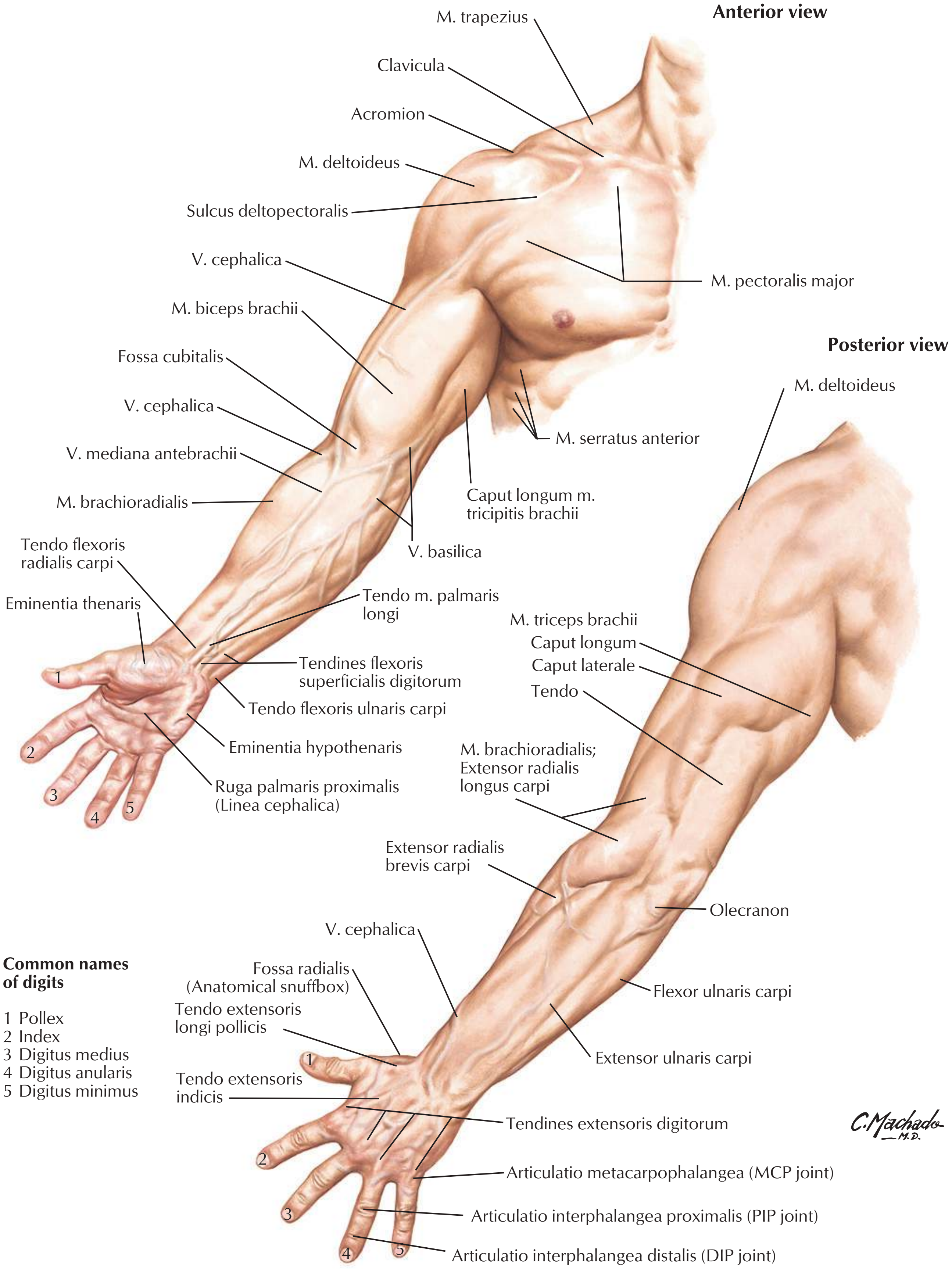

BP103 Flexor and Extensor Zones of Hand

BP104 Section Through Metacarpal and Distal Carpal Bones

BP105 Cross Section of Hand: Axial View

BP106 Cross Section of Hand: Axial View (continued)

See also Plates 161, 249, 403


Anterior view
M. trapezius
Clavicula
Acromion
M. deltoideus
Sulcus deltopectoralis
V. cephalica
M. biceps brachii
Fossa cubitalis
V. cephalica
V. mediana antebrachii
M. brachioradialis
Tendo flexoris radialis carpi
Eminentia thenaris
M. pectoralis major
M. serratus anterior
Caput longum m. tricipitis brachii
V. basilica
Tendo m. palmaris longi
Tendines flexoris superficialis digitorum
Tendo flexoris ulnaris carpi
Eminentia hypothenaris
Ruga palmaris proximalis (Linea cephalica)
1
2
3
4
5
Posterior view
M. deltoideus
M. triceps brachii
Caput longum
Caput laterale
Tendo
M. brachioradialis; Extensor radialis longus carpi
Extensor radialis brevis carpi
Olecranon
V. cephalica
Fossa radialis (Anatomical snuffbox)
Tendo extensoris longi pollicis
Tendo extensoris indicis
Flexor ulnaris carpi
Extensor ulnaris carpi
Tendines extensoris digitorum
Articulatio metacarpophalangea (MCP joint)
Articulatio interphalangea proximalis (PIP joint)
Articulatio interphalangea distalis (DIP joint)
1
2
3
4
5

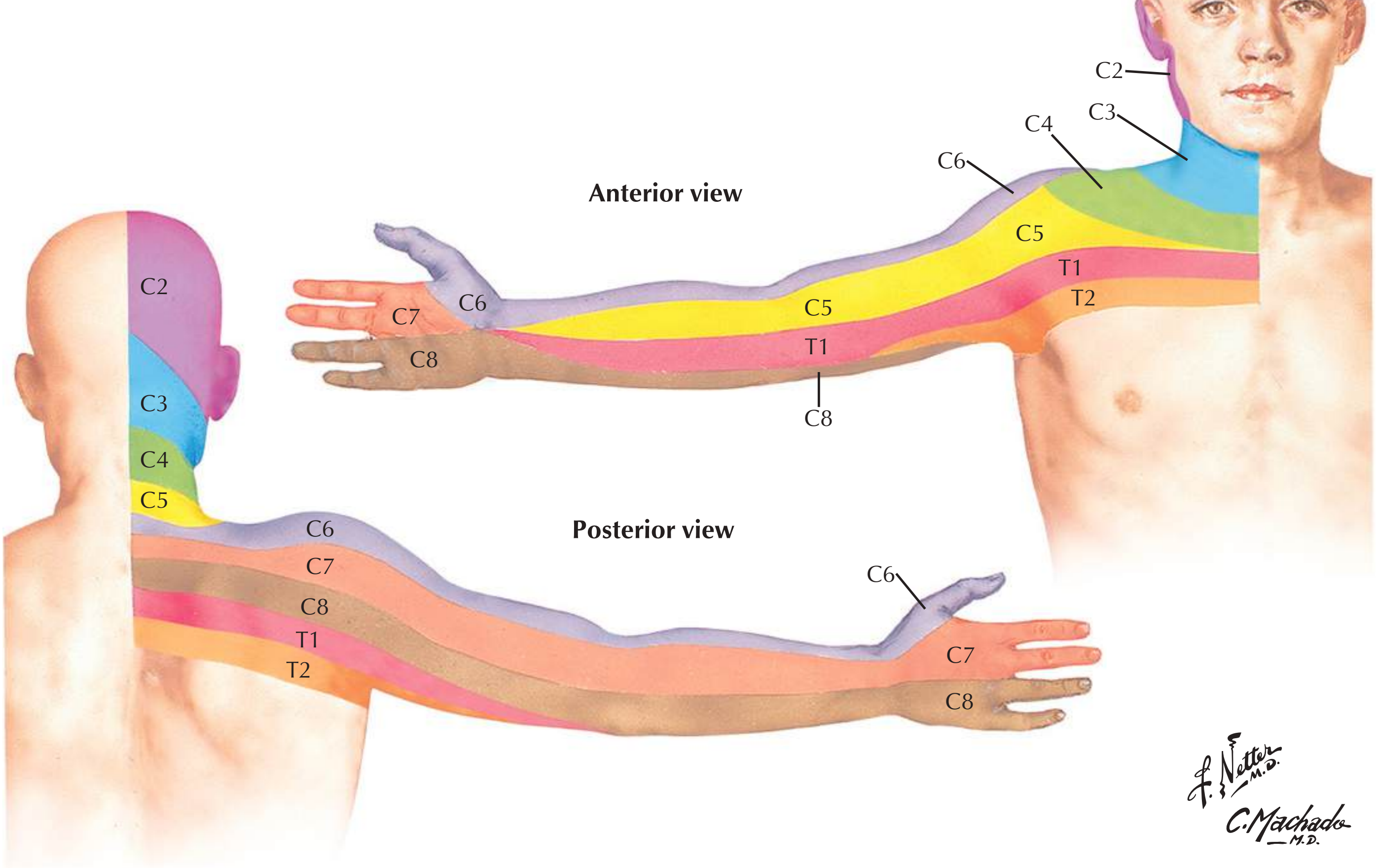
Common names of digits

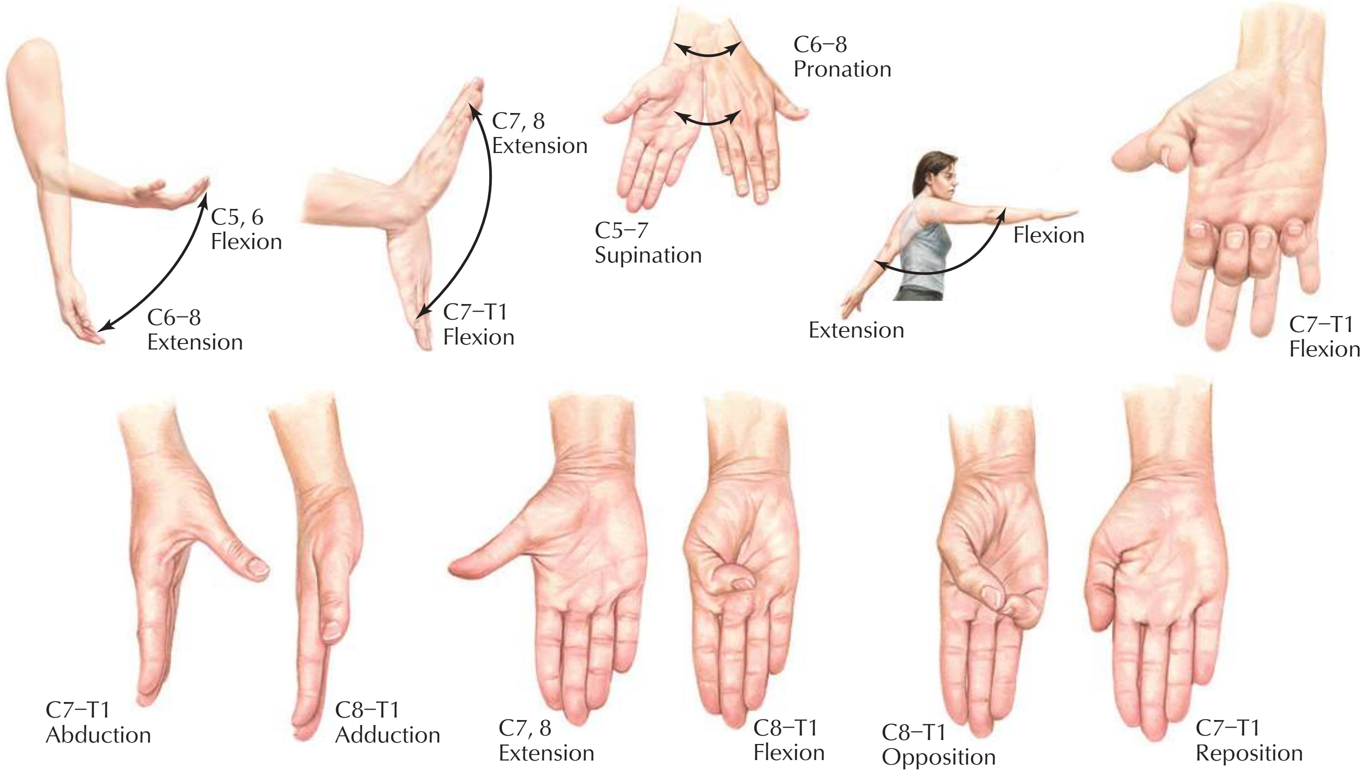
1 Pollex
2 Index
3 Digitus medius
4 Digitus anularis
5 Digitus minimus

Dermatomes of Upper Limb and Segmental Nerve Function

See also Plate 171

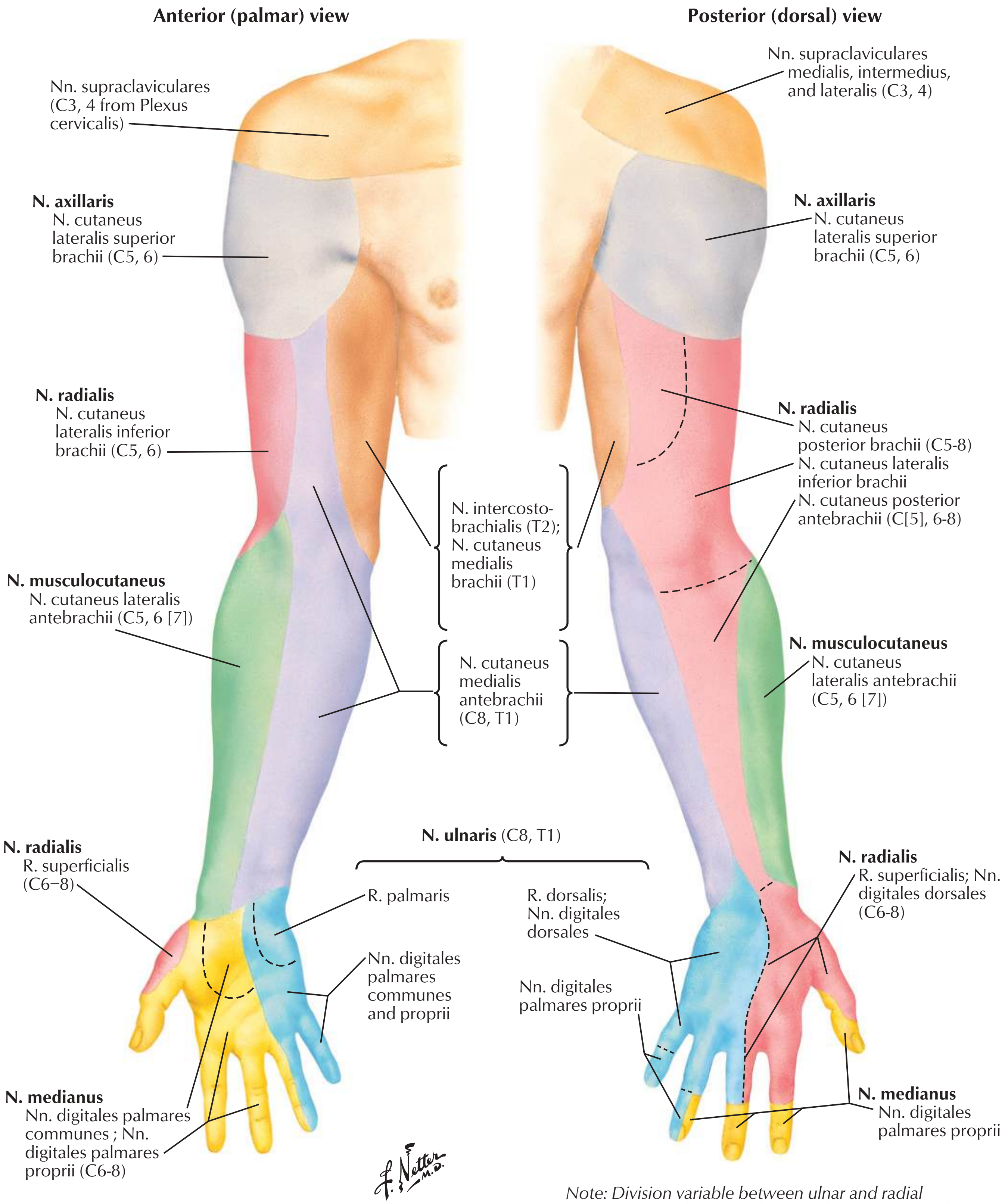
Note: Schematic demarcation of dermatomes (modified from Keegan and Garrett) shown as distinct segments. There is considerable overlap between adjacent dermatomes.


Anterior view
C2
C3
C4
C6
C5
T1
T2
C6
C7
C8
C5
T1
C8
Posterior view
C2
C3
C4
C5
C6
C7
C8
T1
T2
C6
C7
C8


C5, 6
Flexion
C6–8
Extension
C7, 8
Extension
C7–T1
Flexion
C6–8
Pronation
C5–7
Supination
Flexion
Extension
C7–T1
Flexion
C7–T1
Abduction
C8–T1
Adduction
C7, 8
Extension
C8–T1
Flexion
C8–T1
Opposition
C7–T1
Reposition

Cutaneous Innervation of Upper Limb

See also Plates 172, 462, 464



Anterior (palmar) view

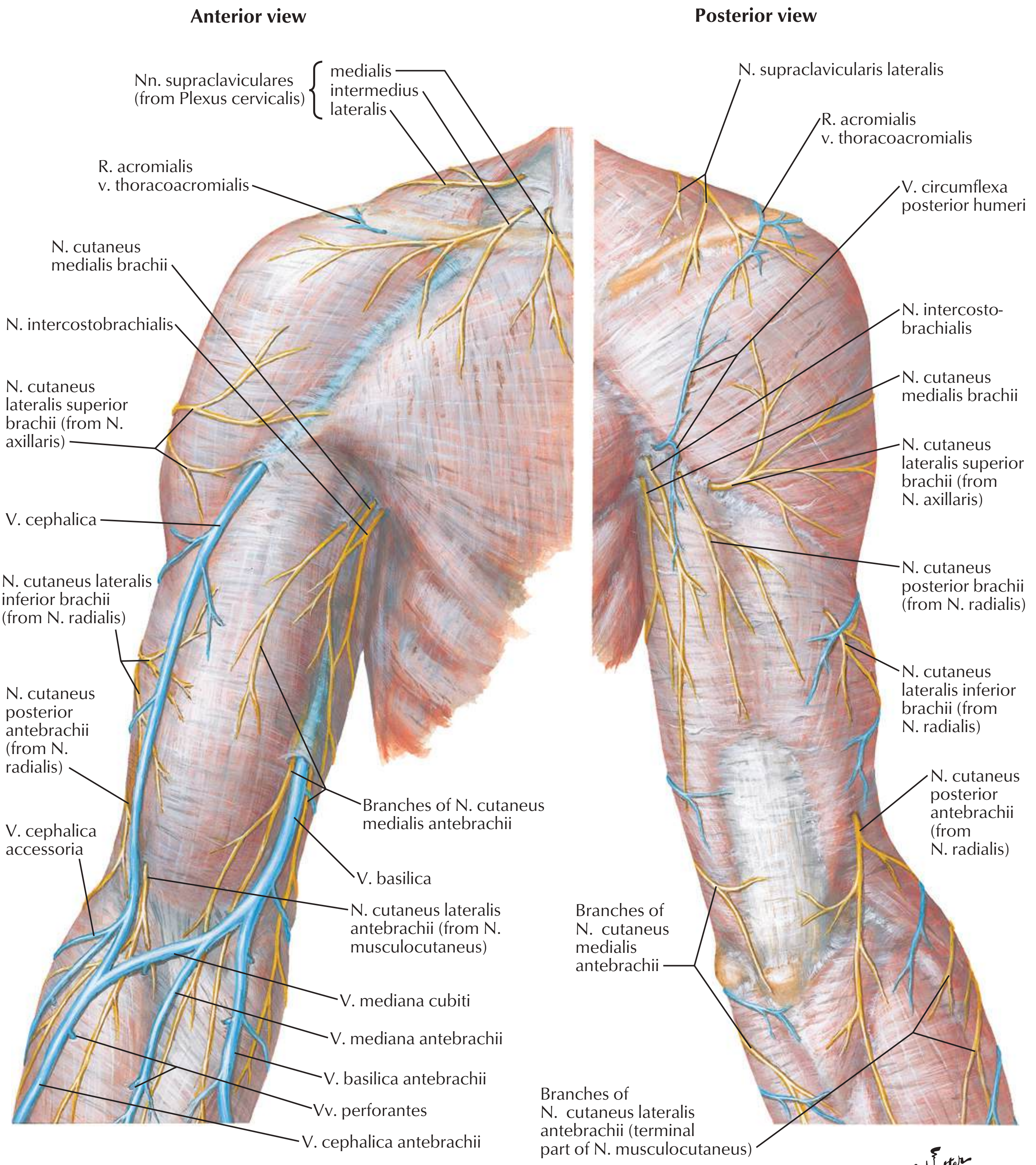
Posterior (dorsal) view

Nn. supraclaviculares (C3, 4 from Plexus cervicalis)
N. axillaris
N. cutaneus lateralis superior brachii (C5, 6)
N. radialis
N. cutaneus lateralis inferior brachii (C5, 6)
N. musculocutaneus
N. cutaneus lateralis antebrachii (C5, 6 [7])
N. radialis
R. superficialis (C6–8)
N. medianus
Nn. digitales palmares communes ; Nn. digitales palmares proprii (C6-8)
N. intercosto-brachialis (T2); N. cutaneus medialis brachii (T1)
N. cutaneus medialis antebrachii (C8, T1)
N. ulnaris (C8, T1)
R. palmaris
Nn. digitales palmares communes and proprii
R. dorsalis; Nn. digitales dorsales
Nn. digitales palmares proprii
Nn. supraclaviculares medialis, intermedius, and lateralis (C3, 4)
N. axillaris
N. cutaneus lateralis superior brachii (C5, 6)
N. radialis
N. cutaneus posterior brachii (C5-8)
N. cutaneus lateralis inferior brachii
N. cutaneus posterior antebrachii (C[5], 6-8)
N. musculocutaneus
N. cutaneus lateralis antebrachii (C5, 6 [7])
N. radialis
R. superficialis; Nn. digitales dorsales (C6-8)
N. medianus
Nn. digitales palmares proprii

Note: Division variable between ulnar and radial innervation on dorsum of hand and often aligns with middle of 4th digit instead of 3rd digit as shown.

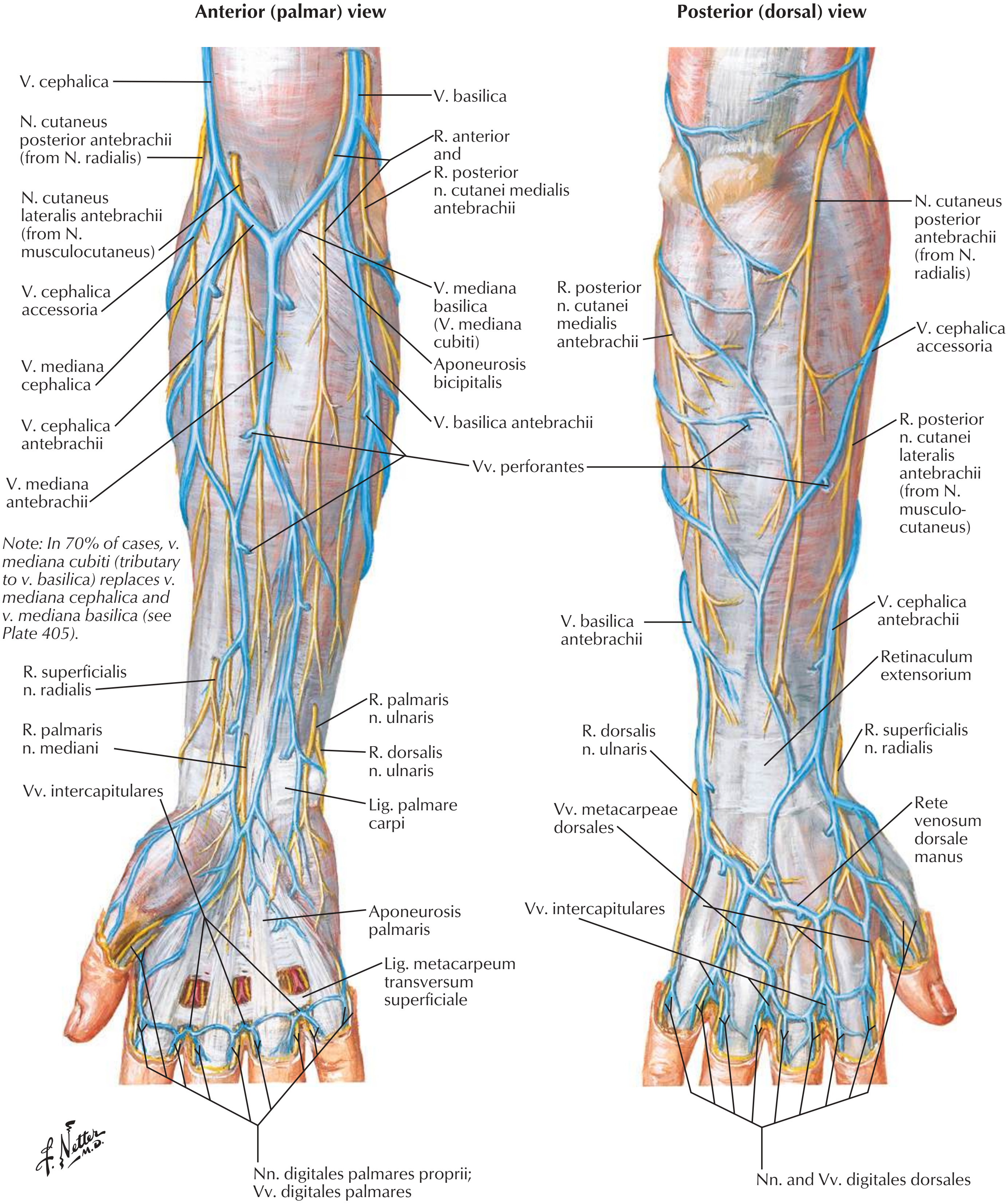
Cutaneous Nerves and Superficial Veins of Proximal Upper Limb

See also Plates 259, 407


Anterior view
Posterior view
Nn. supraclaviculares (from Plexus cervicalis)
medialis
intermedius
lateralis
R. acromialis v. thoracoacromialis
N. cutaneus medialis brachii
N. intercostobrachialis
N. cutaneus lateralis superior brachii (from N. axillaris)
V. cephalica
N. cutaneus lateralis inferior brachii (from N. radialis)
N. cutaneus posterior antebrachii (from N. radialis)
V. cephalica accessoria
Branches of N. cutaneus medialis antebrachii
V. basilica
N. cutaneus lateralis antebrachii (from N. musculocutaneus)
V. mediana cubiti
V. mediana antebrachii
V. basilica antebrachii
Vv. perforantes
V. cephalica antebrachii
N. supraclavicularis lateralis
R. acromialis v. thoracoacromialis
V. circumflexa posterior humeri
N. intercosto-brachialis
N. cutaneus medialis brachii
N. cutaneus lateralis superior brachii (from N. axillaris)
N. cutaneus posterior brachii (from N. radialis)
N. cutaneus lateralis inferior brachii (from N. radialis)
N. cutaneus posterior antebrachii (from N. radialis)
Branches of N. cutaneus medialis antebrachii
Branches of N. cutaneus lateralis antebrachii (terminal part of N. musculocutaneus)

Cutaneous Nerves and Superficial Veins of Forearm and Hand

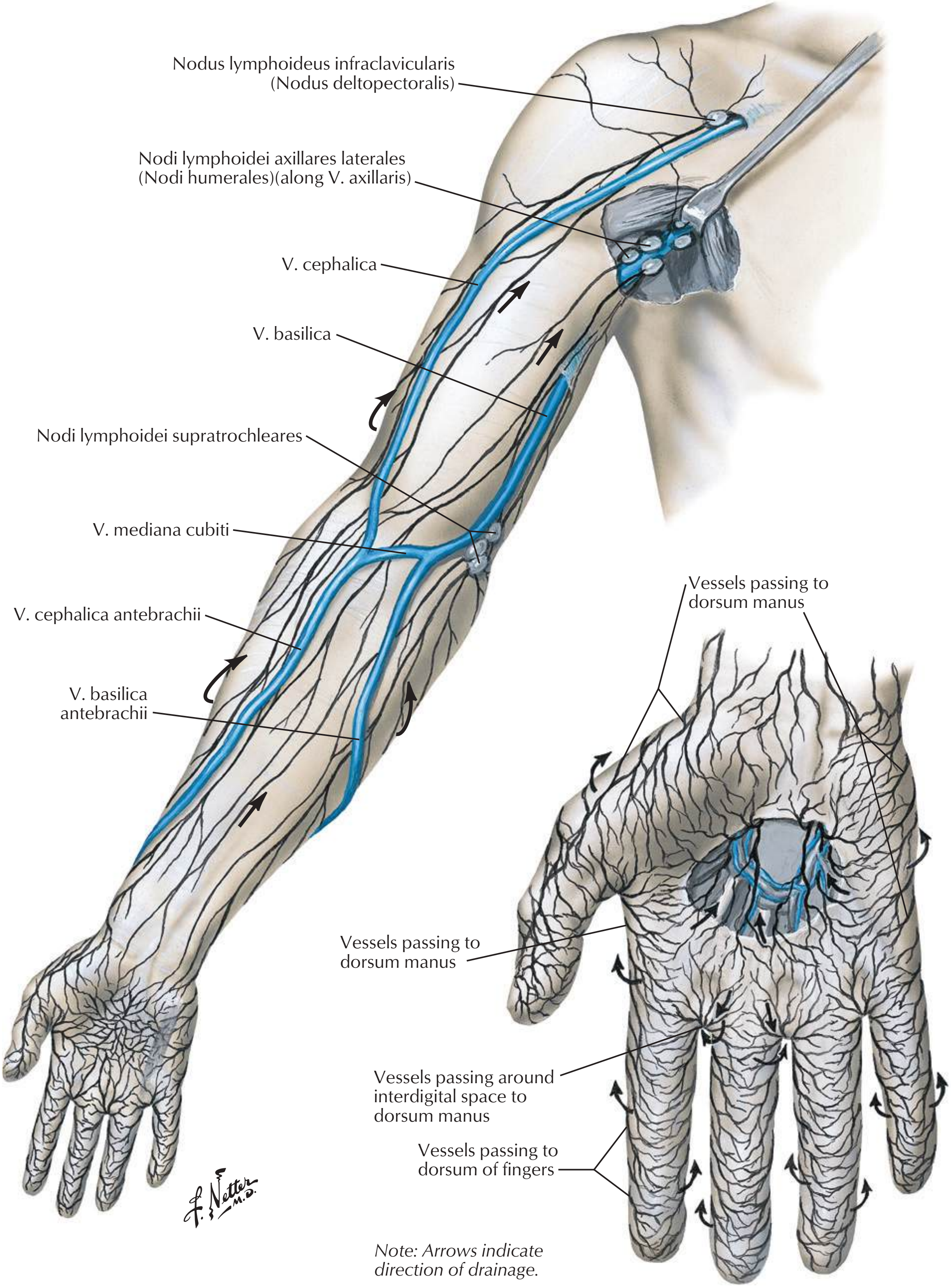
See also Plates 404, 458


Anterior (palmar) view
Posterior (dorsal) view
V. cephalica
N. cutaneus posterior antebrachii (from N. radialis)
N. cutaneus lateralis antebrachii (from N. musculocutaneus)
V. cephalica accessoria
V. mediana cephalica
V. cephalica antebrachii
V. mediana antebrachii
R. superficialis n. radialis
R. palmaris n. mediani
Vv. intercapitulares
V. basilica
R. anterior and R. posterior n. cutanei medialis antebrachii
V. mediana basilica (V. mediana cubiti)
Aponeurosis bicipitalis
V. basilica antebrachii
Vv. perforantes
R. palmaris n. ulnaris
R. dorsalis n. ulnaris
Lig. palmare carpi
Aponeurosis palmaris
Lig. metacarpeum transversum superficiale
Nn. digitales palmares proprii; Vv. digitales palmares
R. posterior n. cutanei medialis antebrachii
V. basilica antebrachii
R. dorsalis n. ulnaris
Vv. metacarpeae dorsales
Vv. intercapitulares
Nn. and Vv. digitales dorsales
N. cutaneus posterior antebrachii (from N. radialis)
V. cephalica accessoria
R. posterior n. cutanei lateralis antebrachii (from N. musculo-cutaneus)
V. cephalica antebrachii
Retinaculum extensorium
R. superficialis n. radialis
Rete venosum dorsale manus
F. Netter M.D.

Note: In 70% of cases, v. mediana cubiti (tributary to v. basilica) replaces v. mediana cephalica and v. mediana basilica (see Plate 405).

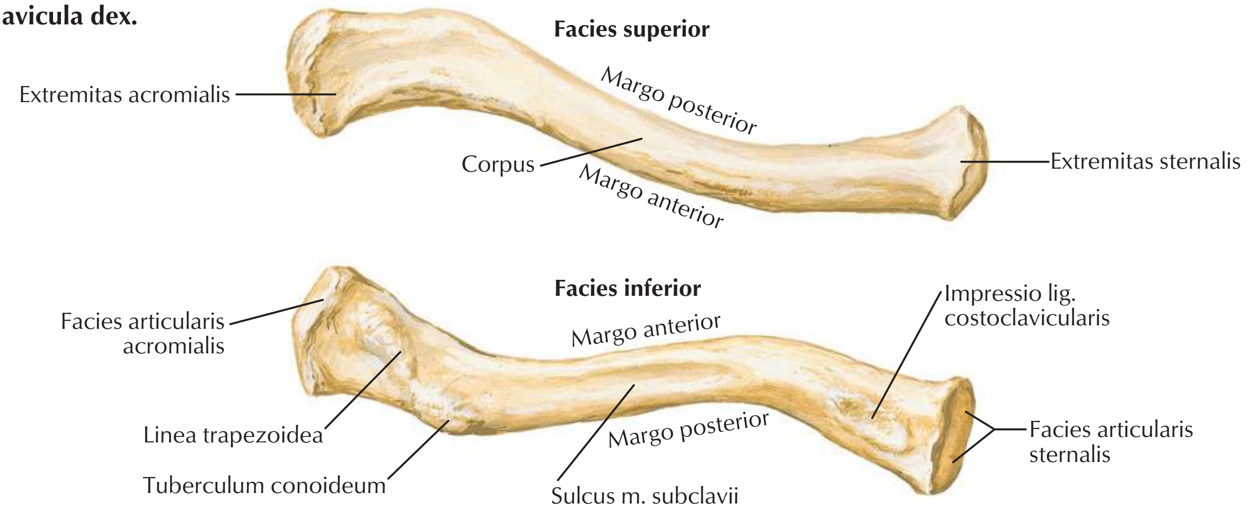
Lymph Vessels and Nodes of Upper Limb

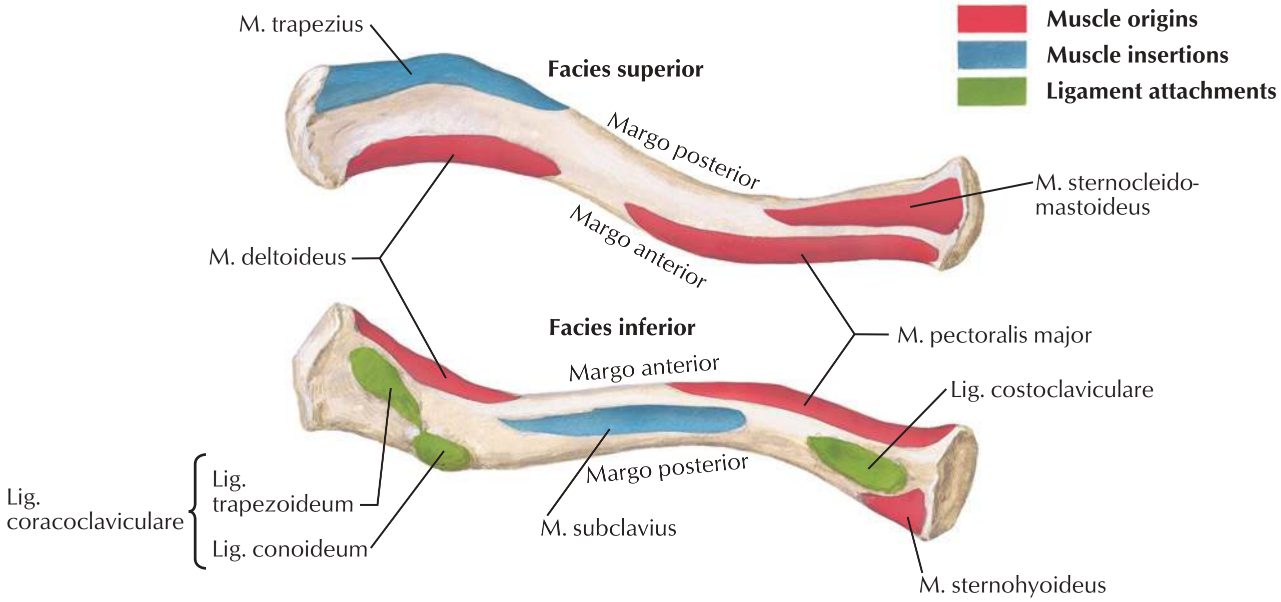
See also Plates 191, 458


Nodus lymphoideus infraclavicularis (Nodus deltopectoralis)
Nodi lymphoidei axillares laterales (Nodi humerales)(along V. axillaris)
V. cephalica
V. basilica
Nodi lymphoidei supratrochleares
V. mediana cubiti
V. cephalica antebrachii
V. basilica antebrachii
Vessels passing to dorsum manus
Vessels passing to dorsum manus
Vessels passing around interdigital space to dorsum manus
Vessels passing to dorsum of fingers

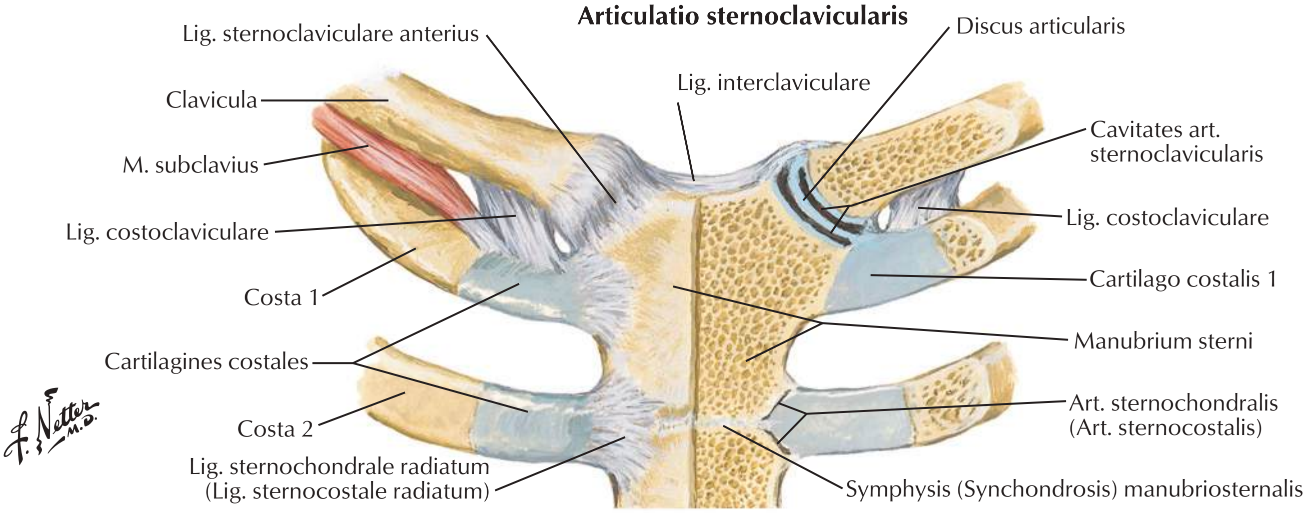
Note: Arrows indicate direction of drainage.

Clavicula dex.


Facies superior
Extremitas acromialis
Margo posterior
Corpus
Margo anterior
Extremitas sternalis
Facies inferior
Facies articularis acromialis
Impressio lig. costoclavicularis
Margo anterior
Linea trapezoidea
Margo posterior
Facies articularis sternalis
Tuberculum conoideum
Sulcus m. subclavii

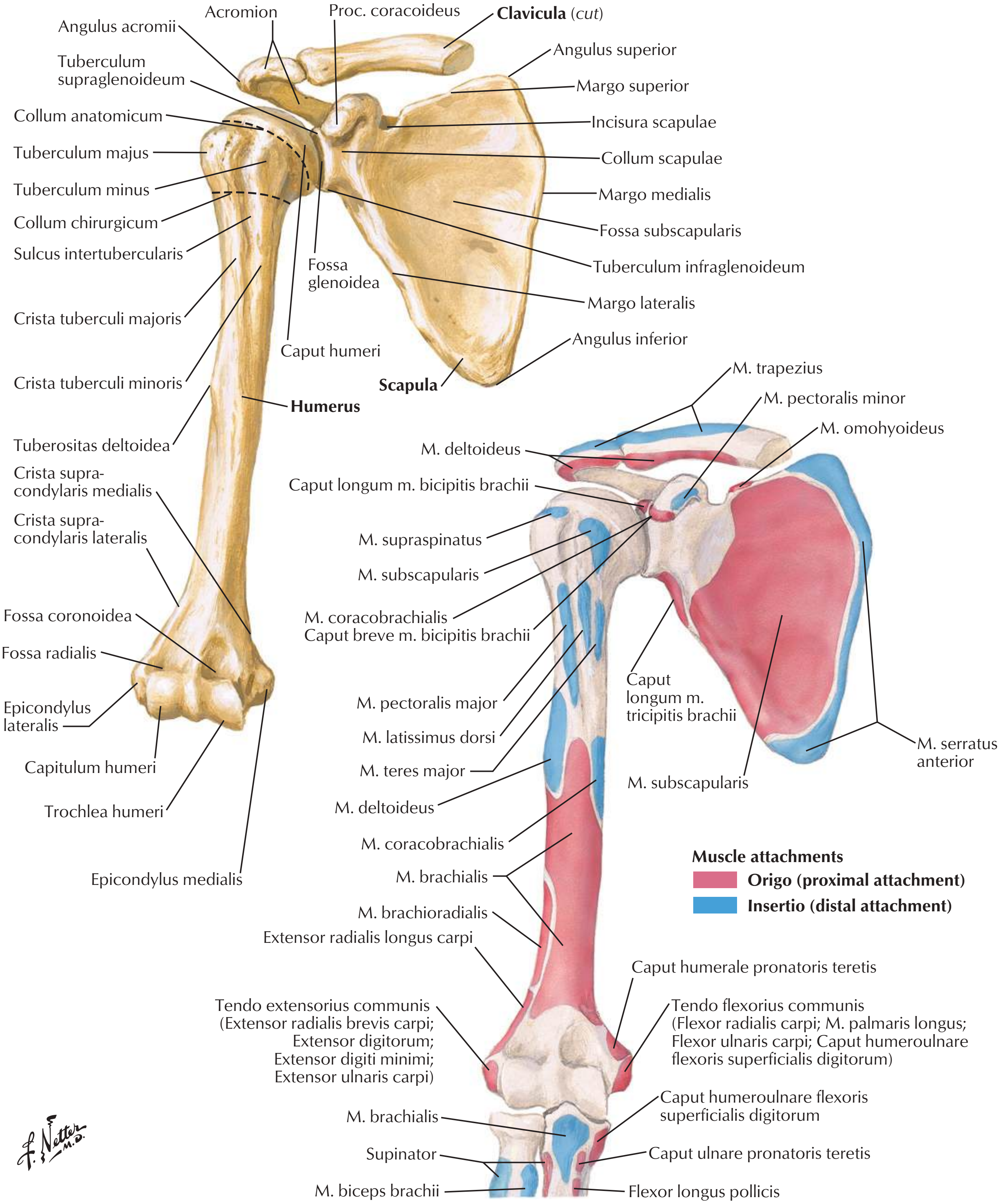

M. trapezius
🟥 Muscle origins
🟦 Muscle insertions
🟩 Ligament attachments
Facies superior
Margo posterior
M. sternocleido-mastoideus
Margo anterior
M. deltoideus
Facies inferior
M. pectoralis major
Margo anterior
Lig. costoclaviculare
Lig. coracoclaviculare
Lig. trapezoideum
Margo posterior
Lig. conoideum
M. subclavius
M. sternohyoideus

Articulatio sternoclavicularis


Lig. sternoclaviculare anterius
Discus articularis
Clavicula
Lig. interclaviculare
Cavitates art. sternoclavicularis
M. subclavius
Lig. costoclaviculare
Lig. costoclaviculare
Costa 1
Cartilago costalis 1
Cartilagines costales
Manubrium sterni
Art. sternochondralis (Art. sternocostalis)
Costa 2
Lig. sternochondrale radiatum (Lig. sternocostale radiatum)
Symphysis (Synchondrosis) manubriosternalis
F. Netter M.D.

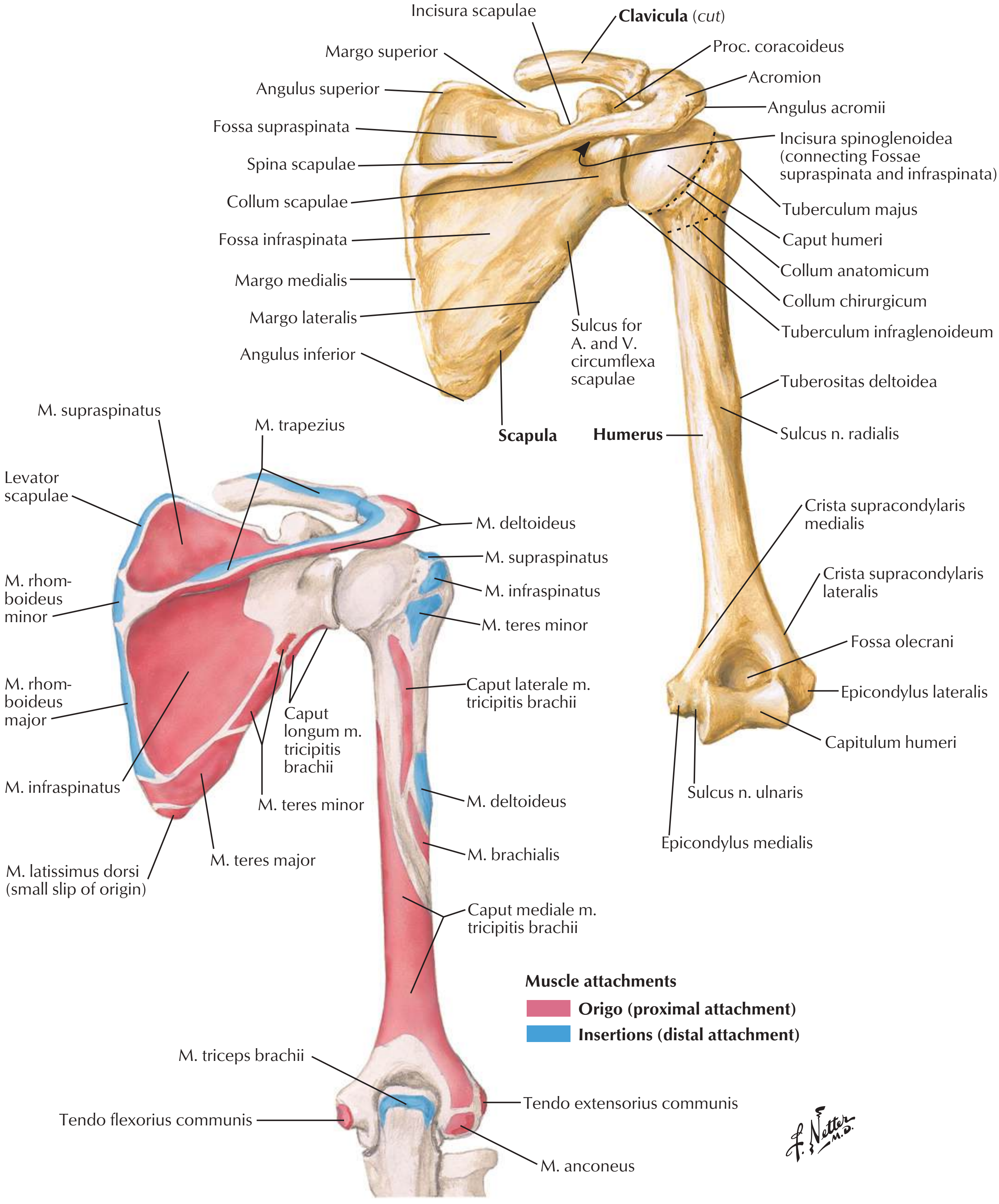
Humerus and Scapula: Anterior Views

See also Plates 192, 411


Acromion
Proc. coracoideus
Clavicula (*cut*)
Angulus acromii
Angulus superior
Tuberculum supraglenoideum
Margo superior
Collum anatomicum
Incisura scapulae
Tuberculum majus
Collum scapulae
Tuberculum minus
Margo medialis
Collum chirurgicum
Fossa subscapularis
Sulcus intertubercularis
Fossa glenoidea
Tuberculum infraglenoideum
Margo lateralis
Crista tuberculi majoris
Caput humeri
Angulus inferior
Crista tuberculi minoris
Scapula
Humerus
Tuberositas deltoidea
Crista supra-condylaris medialis
Crista supra-condylaris lateralis
Fossa coronoidea
Fossa radialis
Epicondylus lateralis
Capitulum humeri
Trochlea humeri
Epicondylus medialis
M. trapezius
M. pectoralis minor
M. omohyoideus
M. deltoideus
Caput longum m. bicipitis brachii
M. supraspinatus
M. subscapularis
M. coracobrachialis
Caput breve m. bicipitis brachii
Caput longum m. tricipitis brachii
M. pectoralis major
M. latissimus dorsi
M. teres major
M. serratus anterior
M. subscapularis
M. deltoideus
M. coracobrachialis
M. brachialis
M. brachioradialis
Extensor radialis longus carpi
Caput humerale pronatoris teretis
Tendo extensorius communis (Extensor radialis brevis carpi; Extensor digitorum; Extensor digiti minimi; Extensor ulnaris carpi)
Tendo flexorius communis (Flexor radialis carpi; M. palmaris longus; Flexor ulnaris carpi; Caput humeroulnare flexoris superficialis digitorum)
M. brachialis
Caput humeroulnare flexoris superficialis digitorum
Supinator
Caput ulnare pronatoris teretis
M. biceps brachii
Flexor longus pollicis
Muscle attachments
🟥 **Origo (proximal attachment)**
🟦 **Insertio (distal attachment)**

Humerus and Scapula: Posterior Views

See also Plate 192

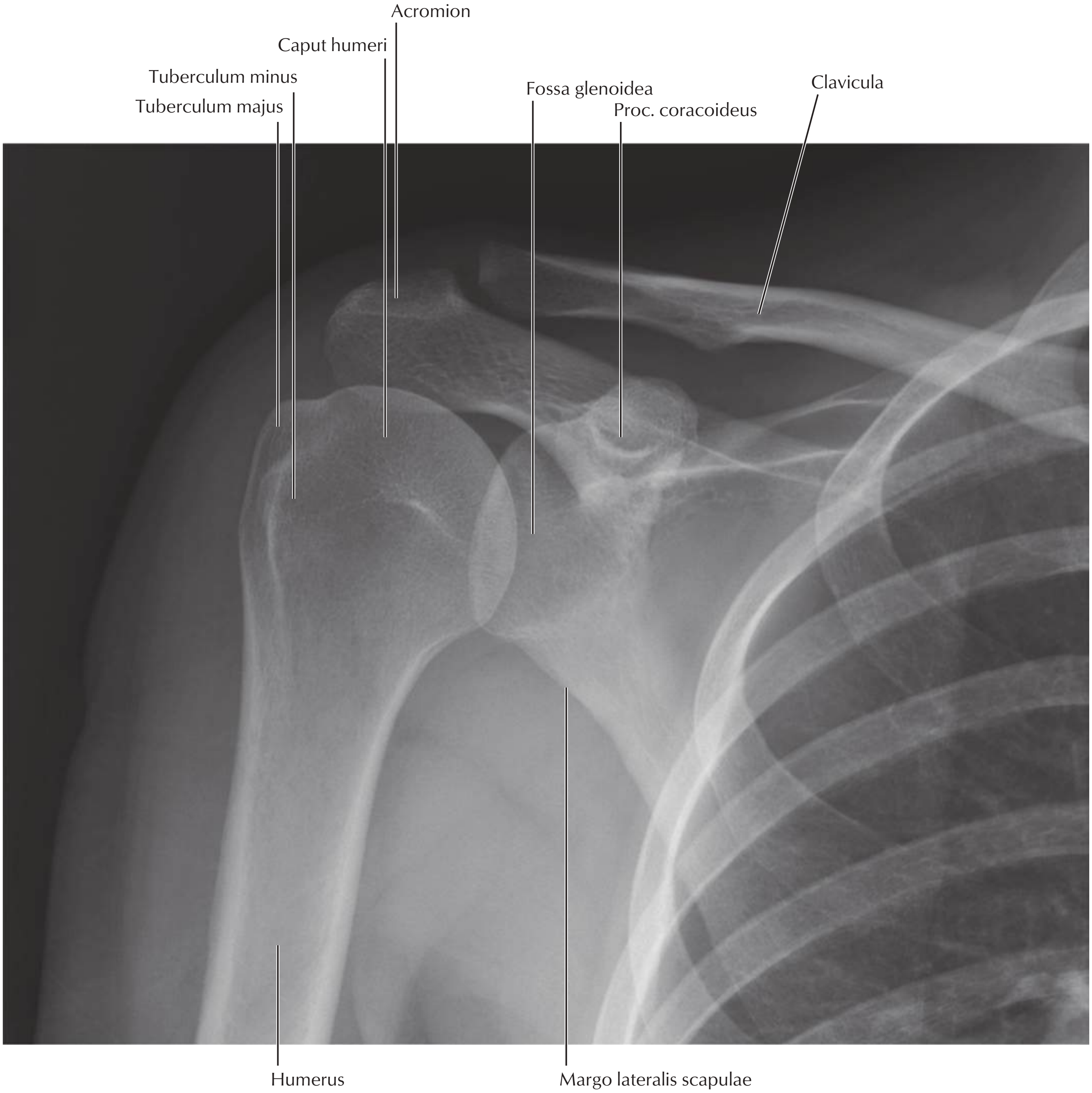

Incisura scapulae
Clavicula (cut)
Margo superior
Proc. coracoideus
Angulus superior
Acromion
Angulus acromii
Fossa supraspinata
Incisura spinoglenoidea (connecting Fossae supraspinata and infraspinata)
Spina scapulae
Collum scapulae
Tuberculum majus
Caput humeri
Fossa infraspinata
Collum anatomicum
Margo medialis
Collum chirurgicum
Margo lateralis
Tuberculum infraglenoideum
Sulcus for A. and V. circumflexa scapulae
Angulus inferior
Tuberositas deltoidea
Scapula
Humerus
Sulcus n. radialis
Crista supracondylaris medialis
Crista supracondylaris lateralis
Fossa olecrani
Epicondylus lateralis
Capitulum humeri
Sulcus n. ulnaris
Epicondylus medialis
M. supraspinatus
M. trapezius
Levator scapulae
M. deltoideus
M. supraspinatus
M. infraspinatus
M. rhomboideus minor
M. teres minor
Caput laterale m. tricipitis brachii
M. rhomboideus major
Caput longum m. tricipitis brachii
M. infraspinatus
M. teres minor
M. deltoideus
M. teres major
M. latissimus dorsi (small slip of origin)
M. brachialis
Caput mediale m. tricipitis brachii
M. triceps brachii
Tendo extensorius communis
Tendo flexorius communis
M. anconeus
F. Netter M.D.

Muscle attachments

🟥 **Origo (proximal attachment)**

🟦 **Insertions (distal attachment)**

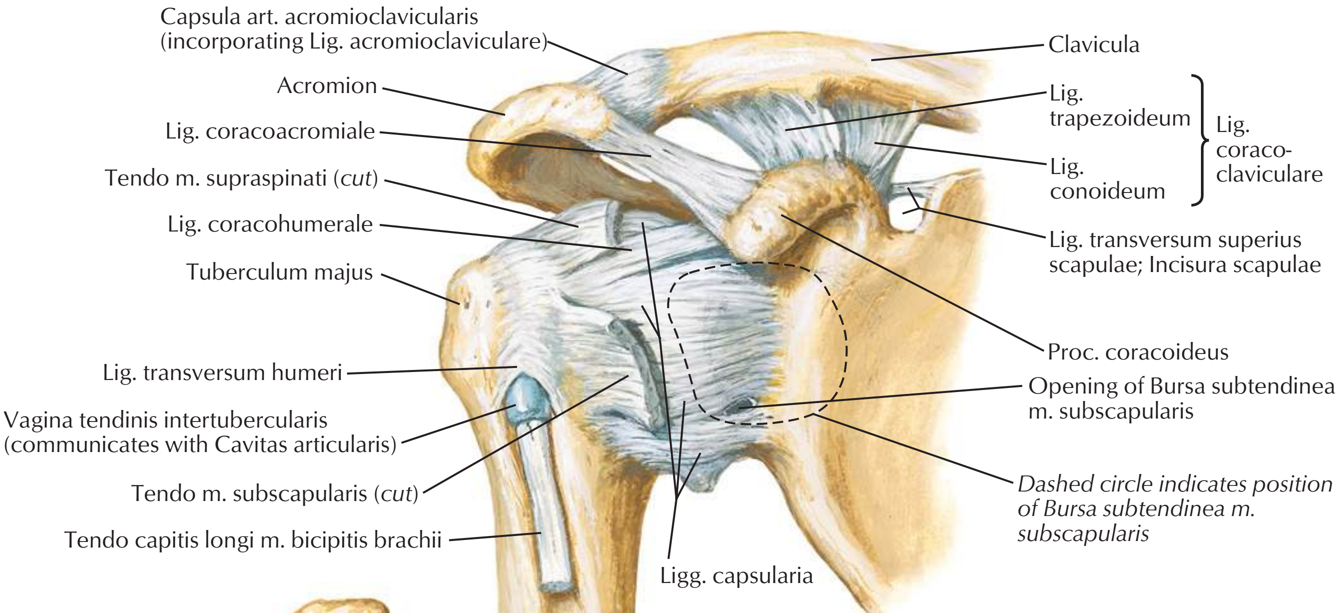
Anteroposterior Radiograph of Shoulder


Acromion
Caput humeri
Tuberculum minus
Tuberculum majus
Fossa glenoidea
Proc. coracoideus
Clavicula
Humerus
Margo lateralis scapulae

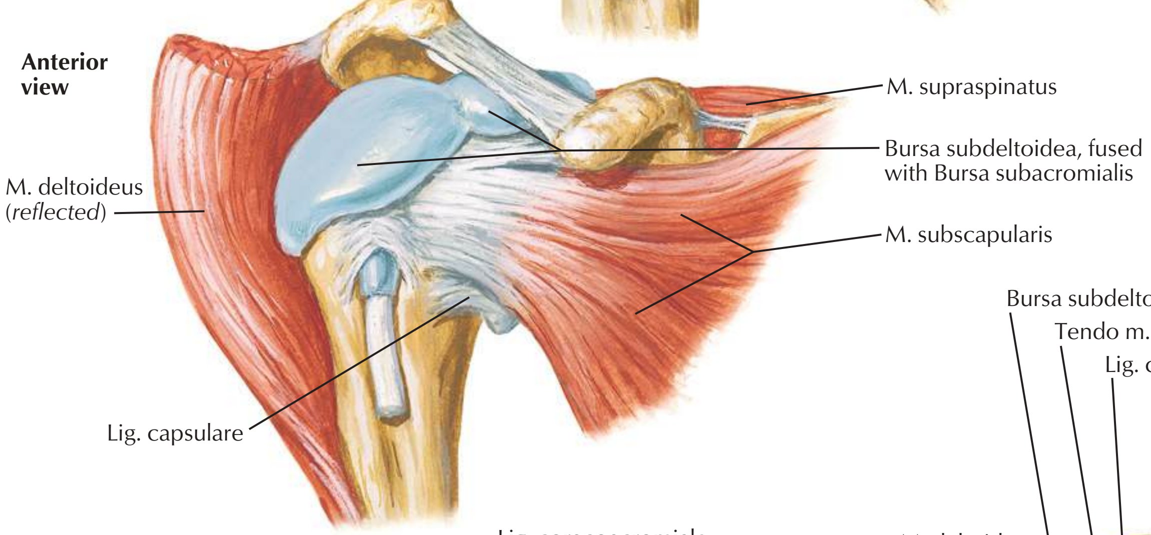
Shoulder with Details of Glenohumeral Joint

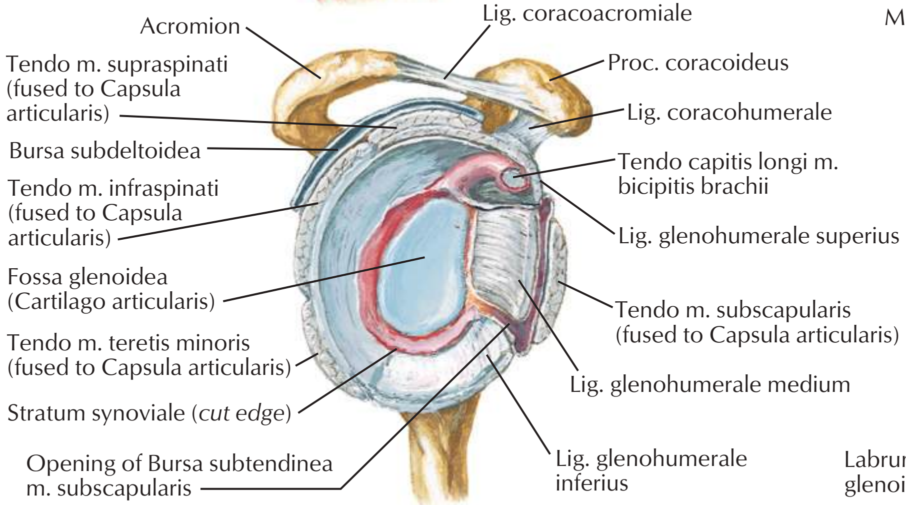
See also Plate 415

Anterior view

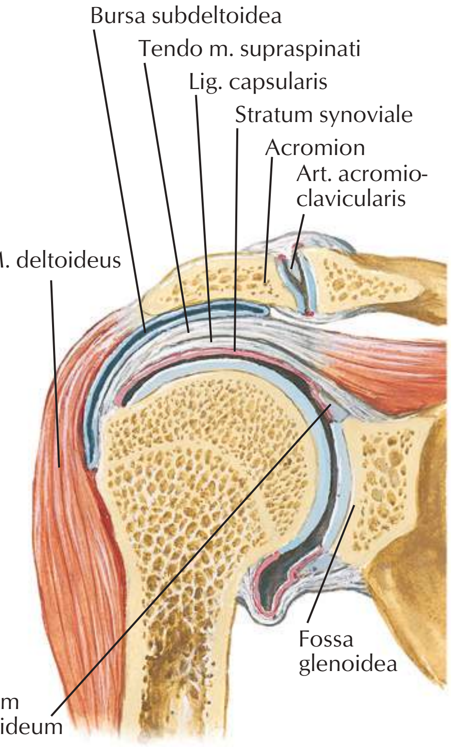

Capsula art. acromioclavicularis (incorporating Lig. acromioclaviculare)
Acromion
Lig. coracoacromiale
Tendo m. supraspinati (cut)
Lig. coracohumerale
Tuberculum majus
Lig. transversum humeri
Vagina tendinis intertubercularis (communicates with Cavitas articularis)
Tendo m. subscapularis (cut)
Tendo capitis longi m. bicipitis brachii
Ligg. capsularia
Clavicula
Lig. trapezoideum
Lig. conoideum
Lig. coraco-claviculare
Lig. transversum superius scapulae; Incisura scapulae
Proc. coracoideus
Opening of Bursa subtendinea m. subscapularis
Dashed circle indicates position of Bursa subtendinea m. subscapularis

Anterior view


M. supraspinatus
Bursa subdeltoidea, fused with Bursa subacromialis
M. deltoideus (reflected)
M. subscapularis
Lig. capsulare


Acromion
Tendo m. supraspinati (fused to Capsula articularis)
Bursa subdeltoidea
Tendo m. infraspinati (fused to Capsula articularis)
Fossa glenoidea (Cartilago articularis)
Tendo m. teretis minoris (fused to Capsula articularis)
Stratum synoviale (cut edge)
Opening of Bursa subtendinea m. subscapularis
Lig. coracoacromiale
Proc. coracoideus
Lig. coracohumerale
Tendo capitis longi m. bicipitis brachii
Lig. glenohumerale superius
Tendo m. subscapularis (fused to Capsula articularis)
Lig. glenohumerale medium
Lig. glenohumerale inferius

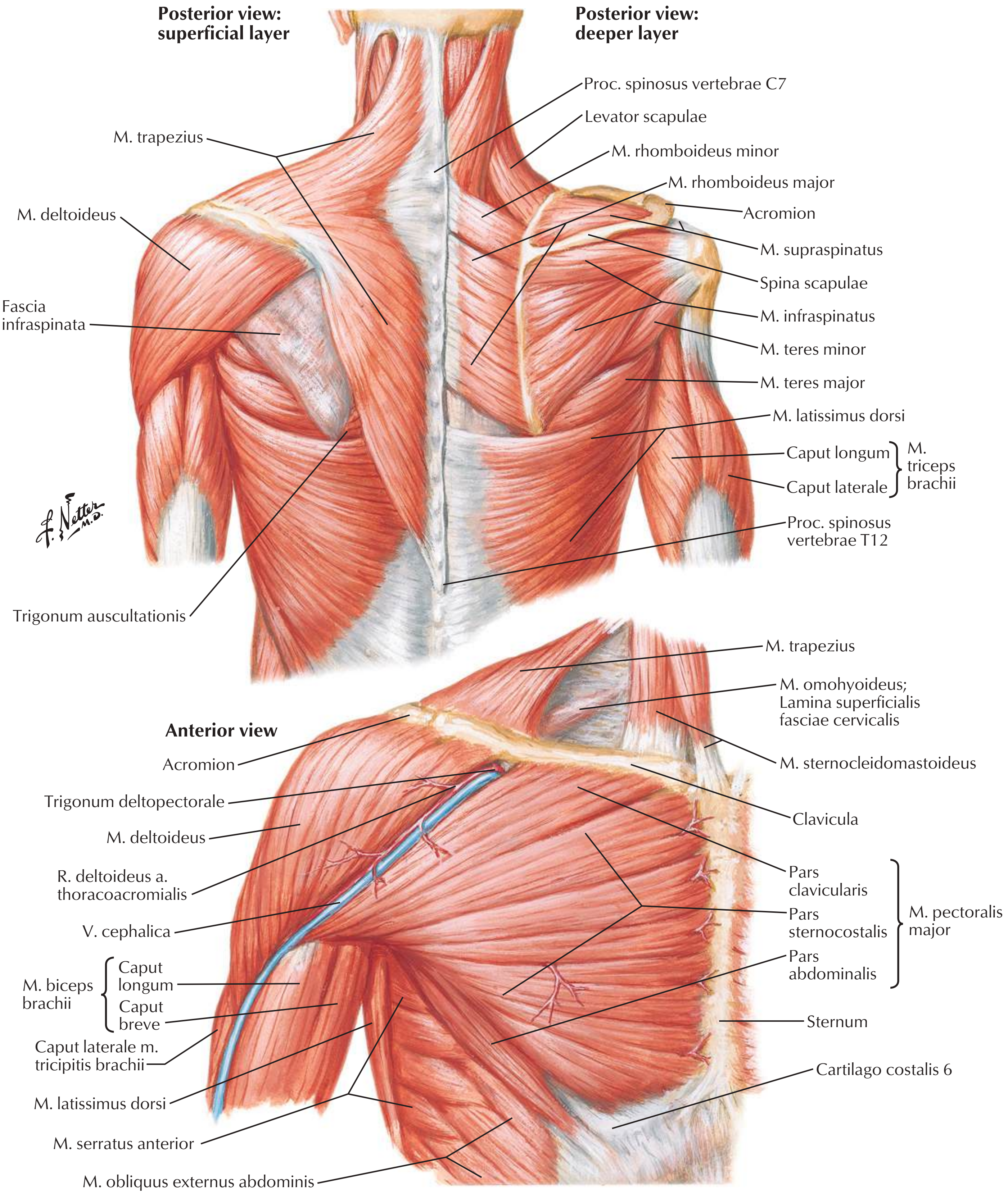
Joint opened: lateral view


Bursa subdeltoidea
Tendo m. supraspinati
Lig. capsularis
Stratum synoviale
Acromion
Art. acromio-clavicularis
M. deltoideus
Fossa glenoidea
Labrum glenoideum

Coronal section through shoulder girdle

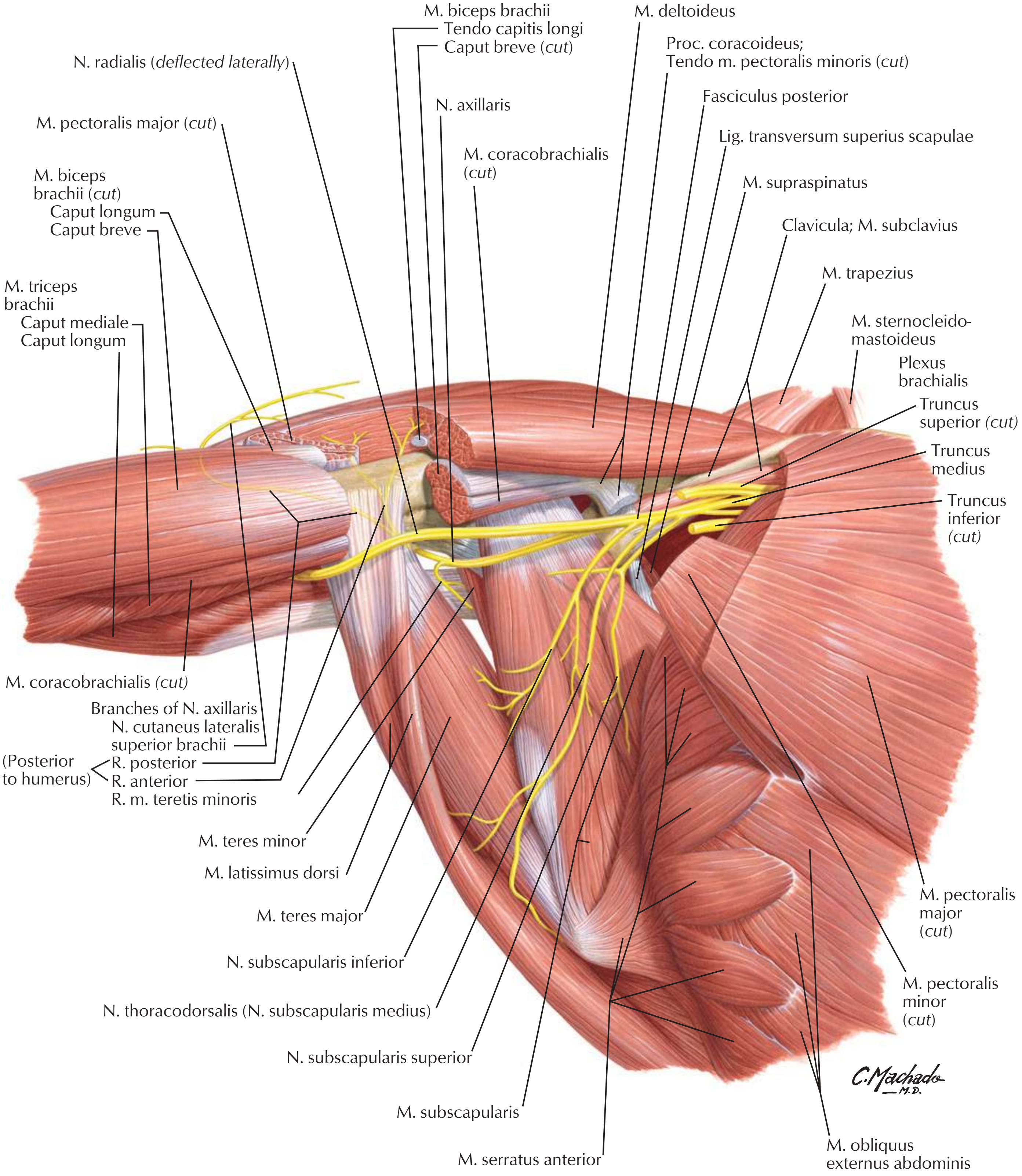
Muscles of Shoulder

See also Plates 180, 194


Posterior view: superficial layer
Posterior view: deeper layer
M. trapezius
M. deltoideus
Fascia infraspinata
Trigonum auscultationis
Proc. spinosus vertebrae C7
Levator scapulae
M. rhomboideus minor
M. rhomboideus major
Acromion
M. supraspinatus
Spina scapulae
M. infraspinatus
M. teres minor
M. teres major
M. latissimus dorsi
Caput longum
Caput laterale
M. triceps brachii
Proc. spinosus vertebrae T12
Anterior view
Acromion
Trigonum deltopectorale
M. deltoideus
R. deltoideus a. thoracoacromialis
V. cephalica
M. biceps brachii
Caput longum
Caput breve
Caput laterale m. tricipitis brachii
M. latissimus dorsi
M. serratus anterior
M. obliquus externus abdominis
M. trapezius
M. omohyoideus; Lamina superficialis fasciae cervicalis
M. sternocleidomastoideus
Clavicula
Pars clavicularis
Pars sternocostalis
Pars abdominalis
M. pectoralis major
Sternum
Cartilago costalis 6

Axilla: Posterior Wall

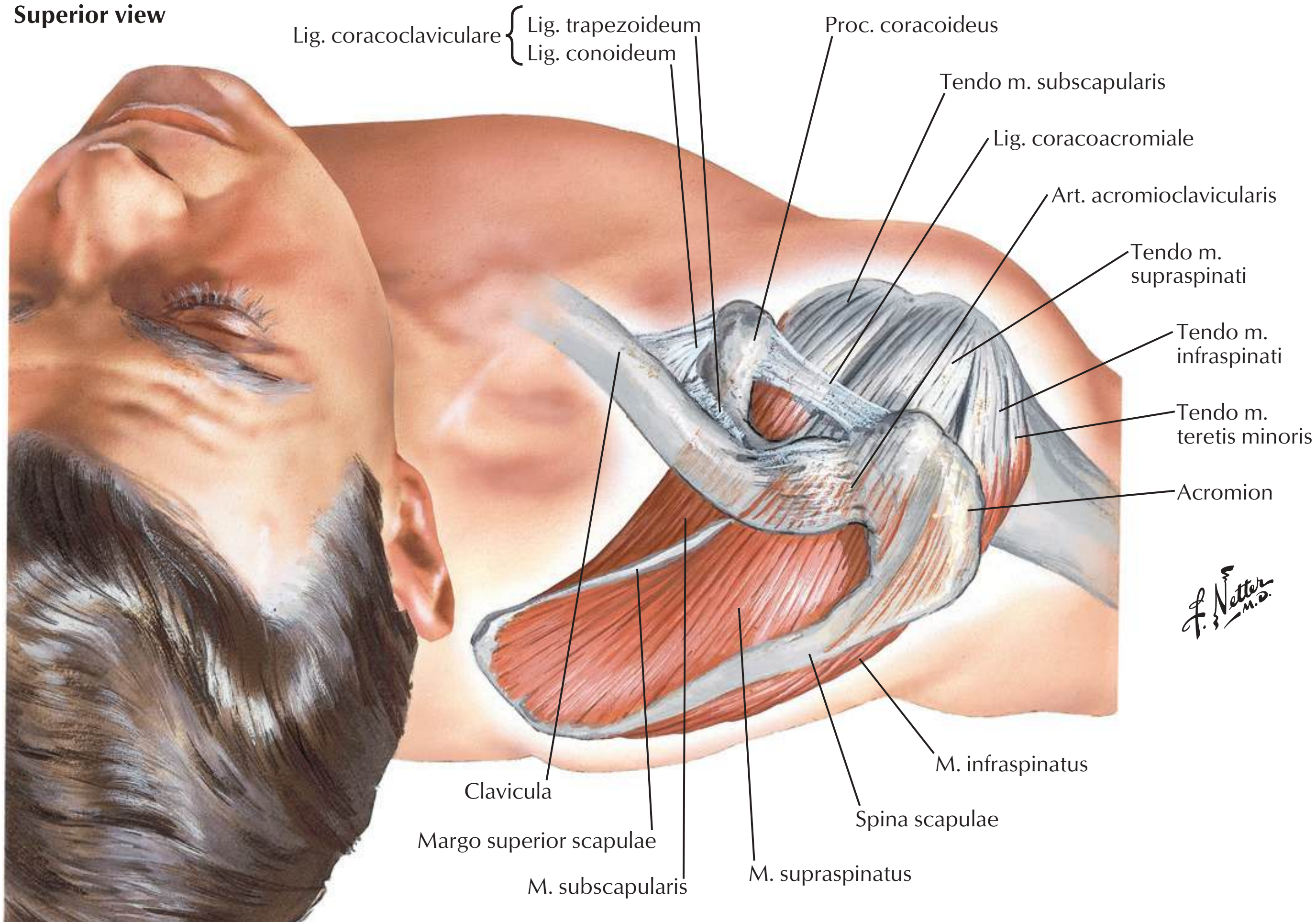
See also Plates 419, 420

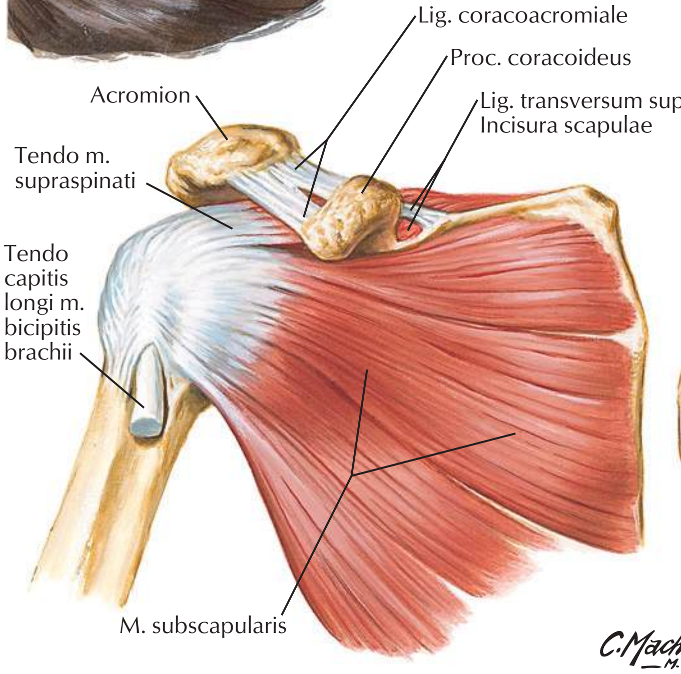

M. biceps brachii
Tendo capitis longi
Caput breve (cut)
M. deltoideus
Proc. coracoideus;
Tendo m. pectoralis minoris (cut)
N. radialis (deflected laterally)
Fasciculus posterior
N. axillaris
M. pectoralis major (cut)
Lig. transversum superius scapulae
M. coracobrachialis
(cut)
M. biceps
brachii (cut)
M. supraspinatus
Caput longum
Caput breve
Clavicula; M. subclavius
M. trapezius
M. triceps
brachii
Caput mediale
Caput longum
M. sternocleido-
mastoideus
Plexus
brachialis
Truncus
superior (cut)
Truncus
medius
Truncus
inferior
(cut)
M. coracobrachialis (cut)
Branches of N. axillaris
N. cutaneus lateralis
superior brachii
(Posterior
to humerus)
R. posterior
R. anterior
R. m. teretis minoris
M. teres minor
M. latissimus dorsi
M. teres major
M. pectoralis
major
(cut)
N. subscapularis inferior
M. pectoralis
minor
(cut)
N. thoracodorsalis (N. subscapularis medius)
N. subscapularis superior
C. Machado
M.D.
M. subscapularis
M. obliquus
externus abdominis
M. serratus anterior

Muscles of Rotator (Compressor) Cuff

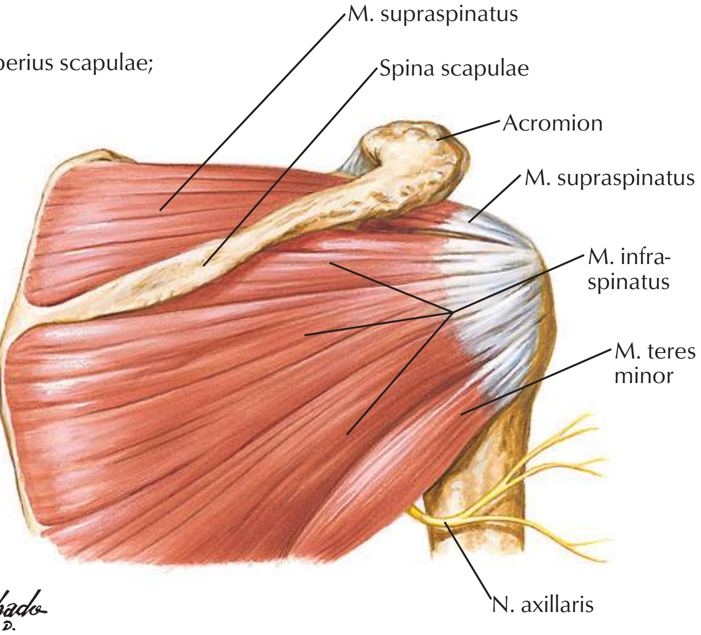
See also Plates 412, 421, 422

Superior view


Lig. coracoclaviculare
Lig. trapezoideum
Lig. conoideum
Proc. coracoideus
Tendo m. subscapularis
Lig. coracoacromiale
Art. acromioclavicularis
Tendo m. supraspinati
Tendo m. infraspinati
Tendo m. teretis minoris
Acromion
M. infraspinatus
Spina scapulae
Clavicula
Margo superior scapulae
M. supraspinatus
M. subscapularis


Lig. coracoacromiale
Proc. coracoideus
Acromion
Lig. transversum superius scapulae; Incisura scapulae
Tendo m. supraspinati
Tendo capitis longi m. bicipitis brachii
M. subscapularis

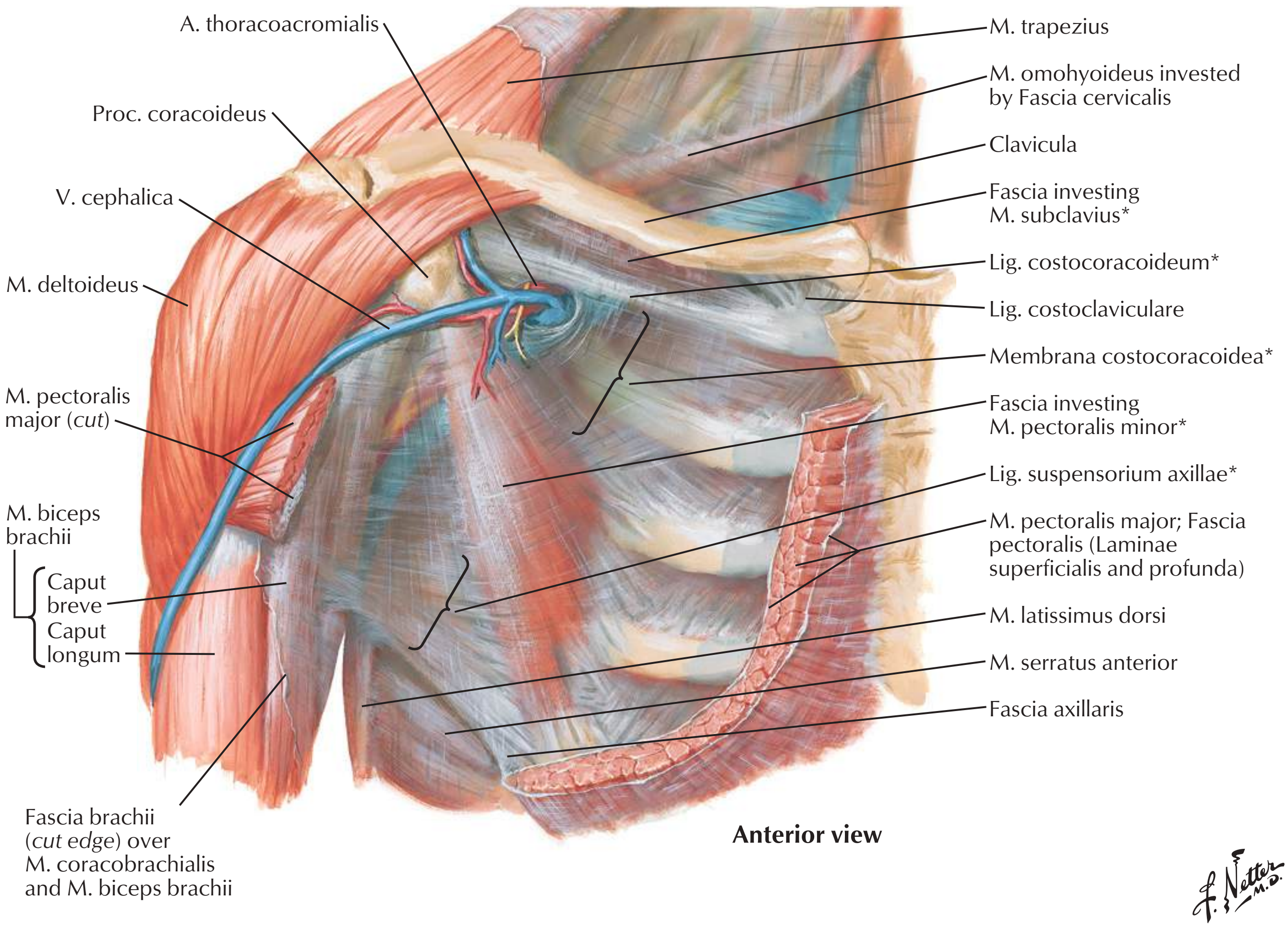
Anterior view


M. supraspinatus
Spina scapulae
Acromion
M. supraspinatus
M. infra-spinatus
M. teres minor
N. axillaris

Posterior view

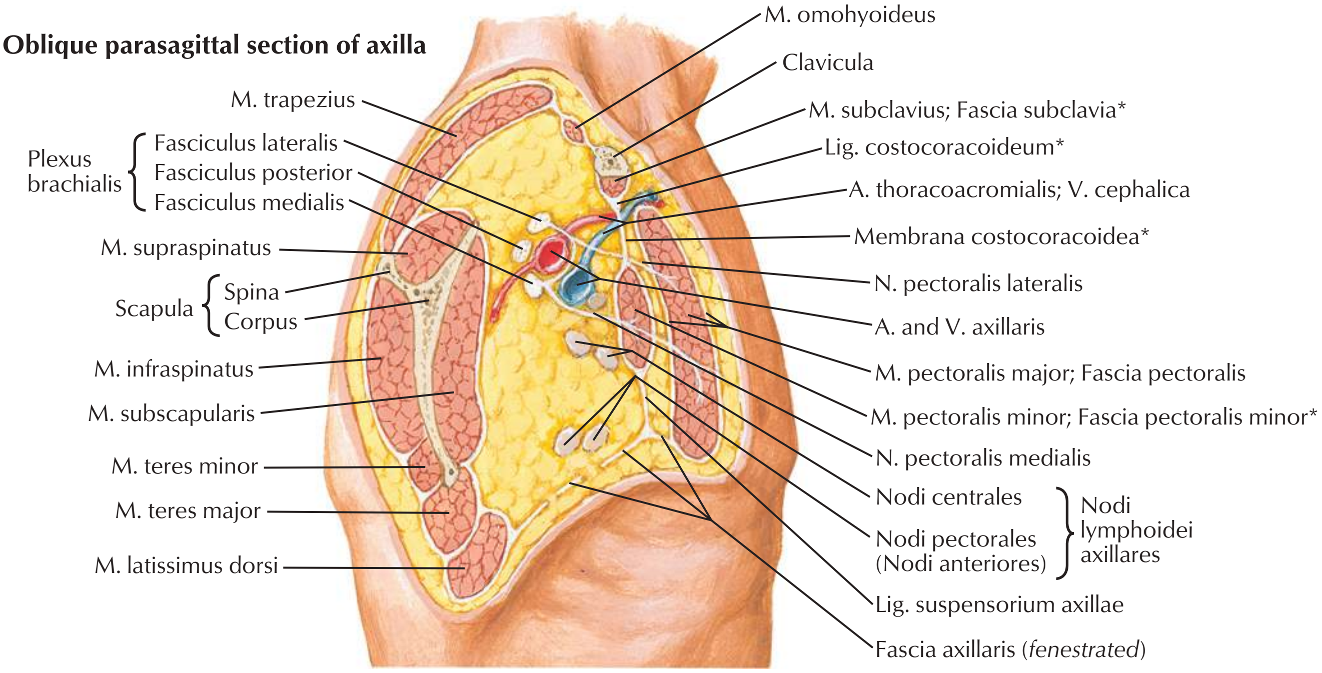
Pectoral, Clavipectoral, and Axillary Fasciae

See also Plates 190, 194


A. thoracoacromialis
Proc. coracoideus
V. cephalica
M. deltoideus
M. pectoralis major (cut)
M. biceps brachii
Caput breve
Caput longum
Fascia brachii (cut edge) over M. coracobrachialis and M. biceps brachii
M. trapezius
M. omohyoideus invested by Fascia cervicalis
Clavicula
Fascia investing M. subclavius*
Lig. costocoracoideum*
Lig. costoclaviculare
Membrana costocoracoidea*
Fascia investing M. pectoralis minor*
Lig. suspensorium axillae*
M. pectoralis major; Fascia pectoralis (Laminae superficialis and profunda)
M. latissimus dorsi
M. serratus anterior
Fascia axillaris
F. Netter M.D.

Anterior view

Oblique parasagittal section of axilla

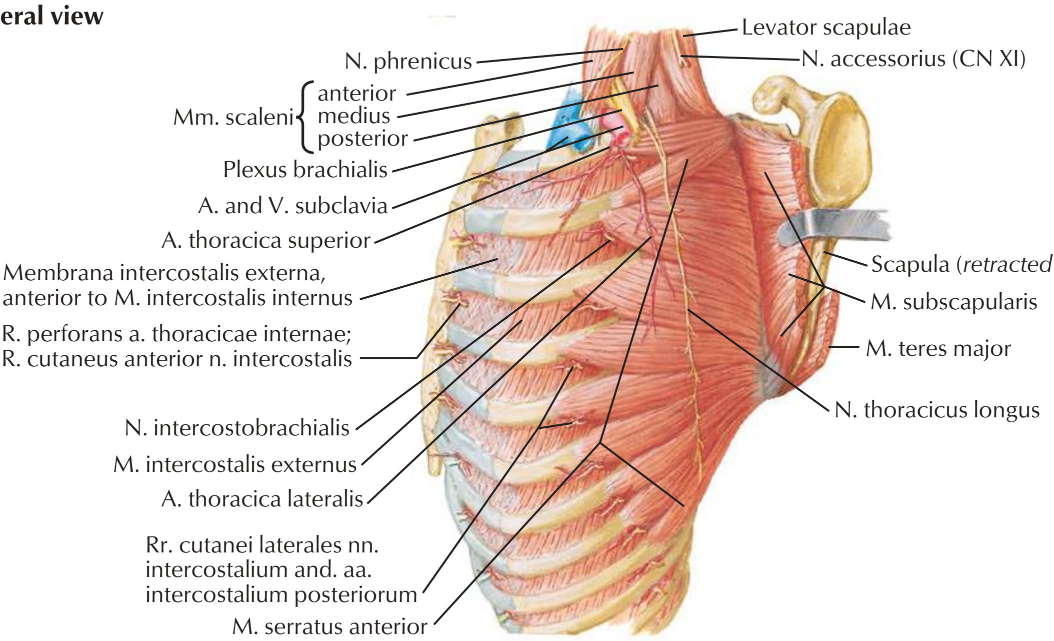

M. omohyoideus
Clavicula
M. subclavius; Fascia subclavia*
Lig. costocoracoideum*
A. thoracoacromialis; V. cephalica
Membrana costocoracoidea*
N. pectoralis lateralis
A. and V. axillaris
M. pectoralis major; Fascia pectoralis
M. pectoralis minor; Fascia pectoralis minor*
N. pectoralis medialis
Nodi centrales
Nodi pectorales (Nodi anteriores)
Nodi lymphoidei axillares
Lig. suspensorium axillae
Fascia axillaris (fenestrated)
M. trapezius
Plexus brachialis
Fasciculus lateralis
Fasciculus posterior
Fasciculus medialis
M. supraspinatus
Scapula
Spina
Corpus
M. infraspinatus
M. subscapularis
M. teres minor
M. teres major
M. latissimus dorsi

*Components of Fascia clavipectoralis

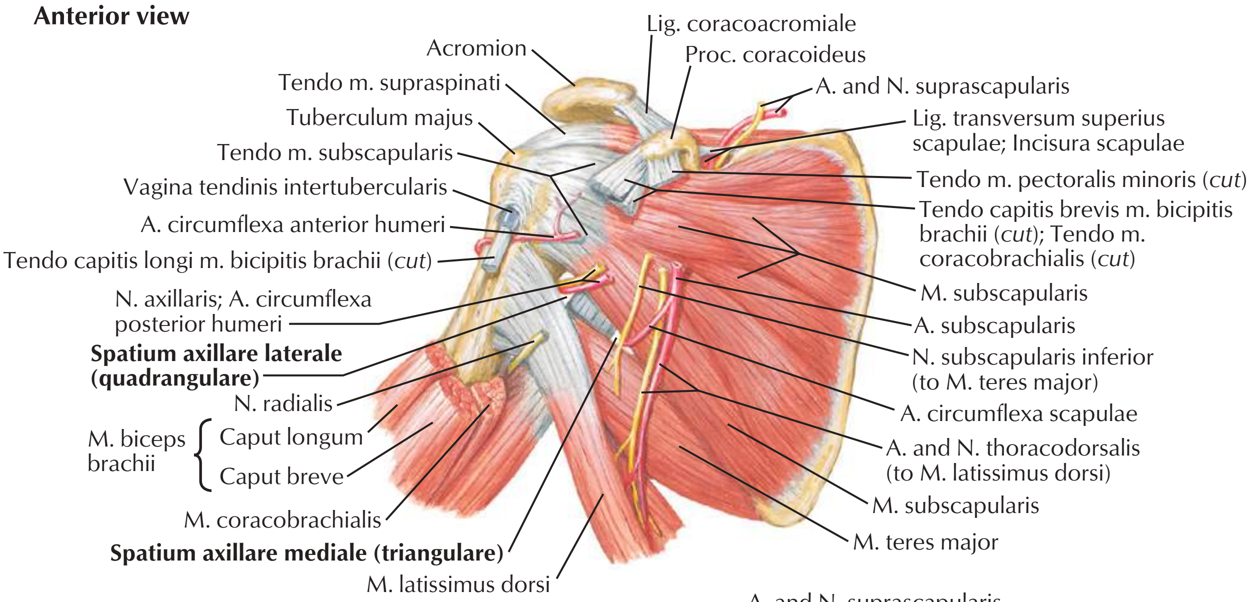
Scapulothoracic and Shoulder Dissection

See also Plates 419, 468

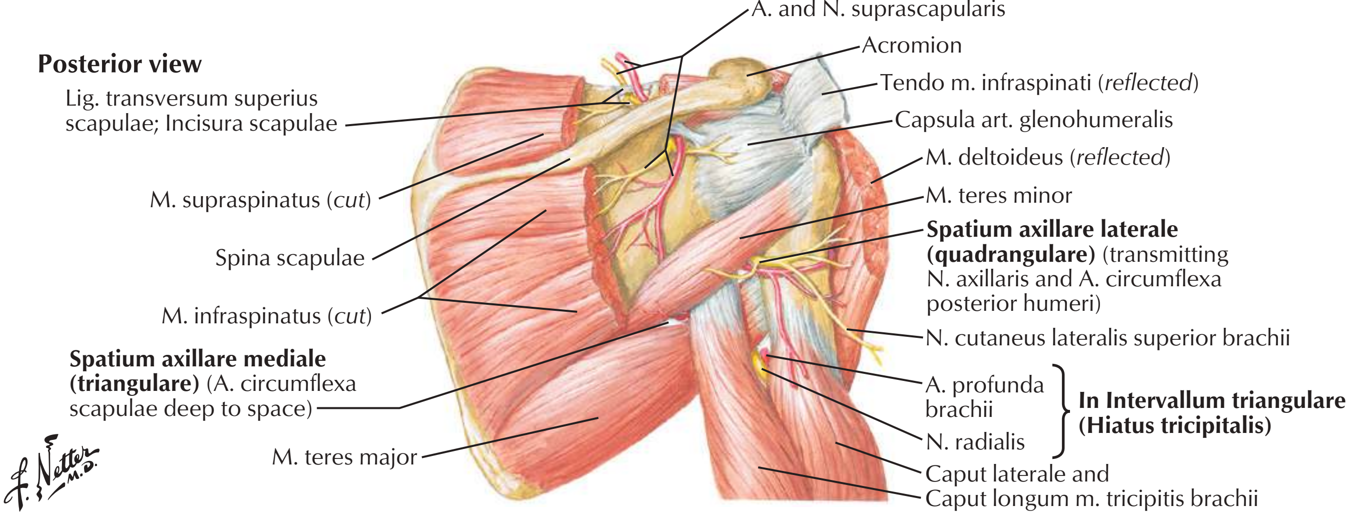
Lateral view


Levator scapulae
N. accessorius (CN XI)
N. phrenicus
Mm. scaleni
anterior
medius
posterior
Plexus brachialis
A. and V. subclavia
A. thoracica superior
Membrana intercostalis externa, anterior to M. intercostalis internus
R. perforans a. thoracicae internae; R. cutaneus anterior n. intercostalis
Scapula (*retracted*)
M. subscapularis
M. teres major
N. thoracicus longus
N. intercostobrachialis
M. intercostalis externus
A. thoracica lateralis
Rr. cutanei laterales nn. intercostalium and. aa. intercostalium posteriorum
M. serratus anterior

Anterior view


Lig. coracoacromiale
Acromion
Proc. coracoideus
Tendo m. supraspinati
A. and N. suprascapularis
Tuberculum majus
Lig. transversum superius scapulae; Incisura scapulae
Tendo m. subscapularis
Tendo m. pectoralis minoris (*cut*)
Vagina tendinis intertubercularis
Tendo capitis brevis m. bicipitis brachii (*cut*); Tendo m. coracobrachialis (*cut*)
A. circumflexa anterior humeri
Tendo capitis longi m. bicipitis brachii (*cut*)
M. subscapularis
N. axillaris; A. circumflexa posterior humeri
A. subscapularis
Spatium axillare laterale (quadrangulare)
N. subscapularis inferior (to M. teres major)
N. radialis
A. circumflexa scapulae
M. biceps brachii
Caput longum
Caput breve
A. and N. thoracodorsalis (to M. latissimus dorsi)
M. subscapularis
M. coracobrachialis
M. teres major
Spatium axillare mediale (triangulare)
M. latissimus dorsi

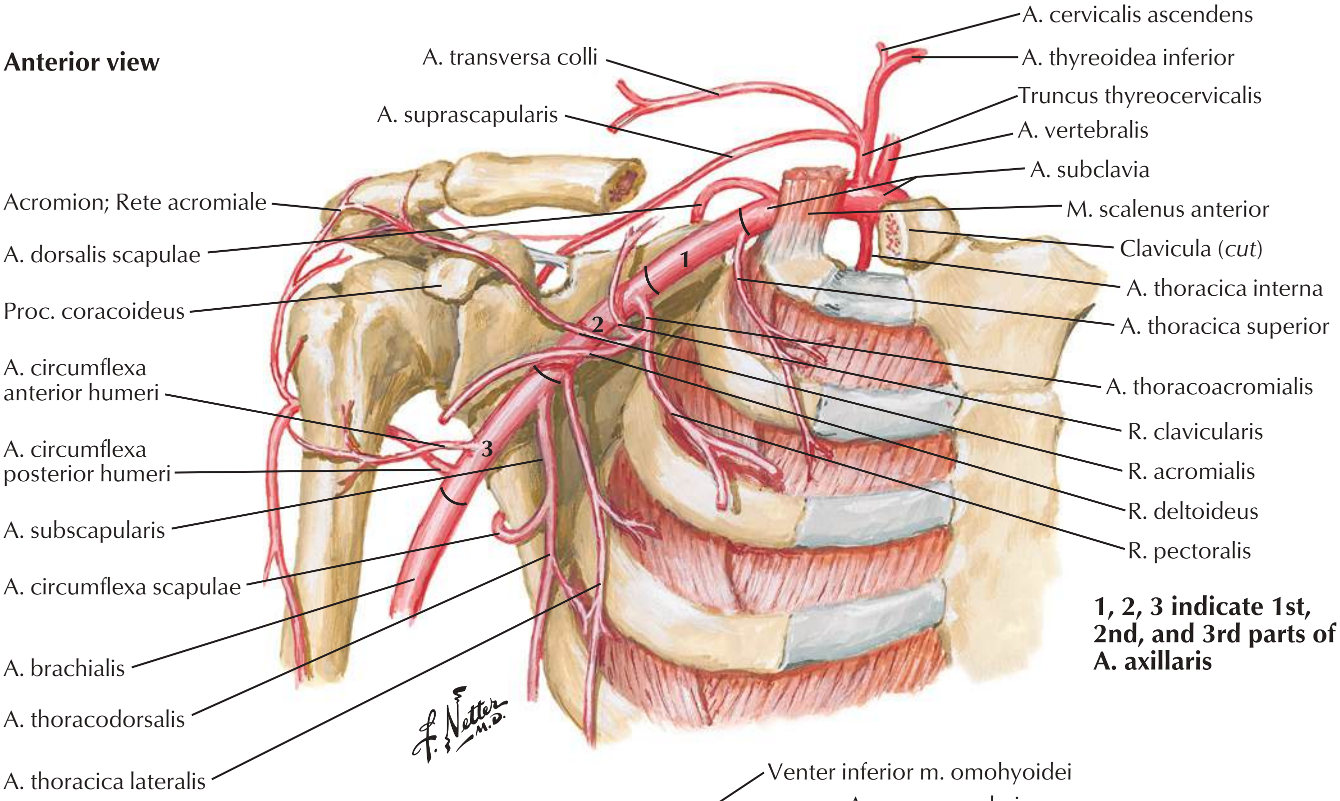
Posterior view


A. and N. suprascapularis
Acromion
Lig. transversum superius scapulae; Incisura scapulae
Tendo m. infraspinati (*reflected*)
Capsula art. glenohumeralis
M. deltoideus (*reflected*)
M. supraspinatus (*cut*)
M. teres minor
Spatium axillare laterale (quadrangulare) (transmitting N. axillaris and A. circumflexa posterior humeri)
Spina scapulae
M. infraspinatus (*cut*)
N. cutaneus lateralis superior brachii
Spatium axillare mediale (triangulare) (A. circumflexa scapulae deep to space)
A. profunda brachii
N. radialis
In Intervallum triangulare (Hiatus tricipitalis)
M. teres major
Caput laterale and Caput longum m. tricipitis brachii

Axillary Artery and Anastomoses Around Scapula

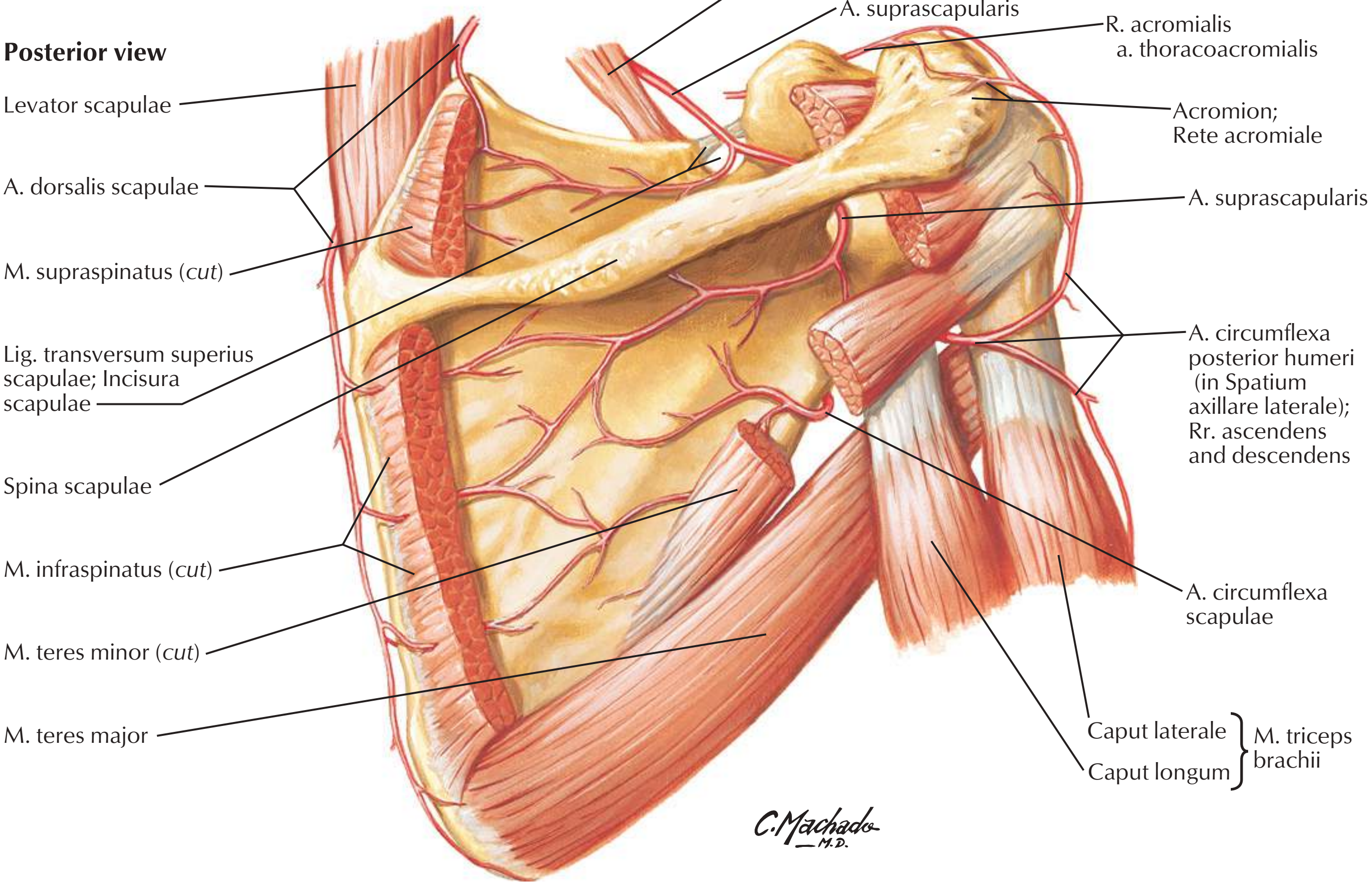
See also Plates 40, 424

Anterior view


A. cervicalis ascendens
A. thyreoidea inferior
A. transversa colli
Truncus thyreocervicalis
A. suprascapularis
A. vertebralis
A. subclavia
Acromion; Rete acromiale
M. scalenus anterior
Clavicula (*cut*)
A. dorsalis scapulae
A. thoracica interna
Proc. coracoideus
A. thoracica superior
1
2
3
A. circumflexa anterior humeri
A. thoracoacromialis
R. clavicularis
A. circumflexa posterior humeri
R. acromialis
R. deltoideus
A. subscapularis
R. pectoralis
A. circumflexa scapulae
A. brachialis
A. thoracodorsalis
A. thoracica lateralis
F. Netter M.D.

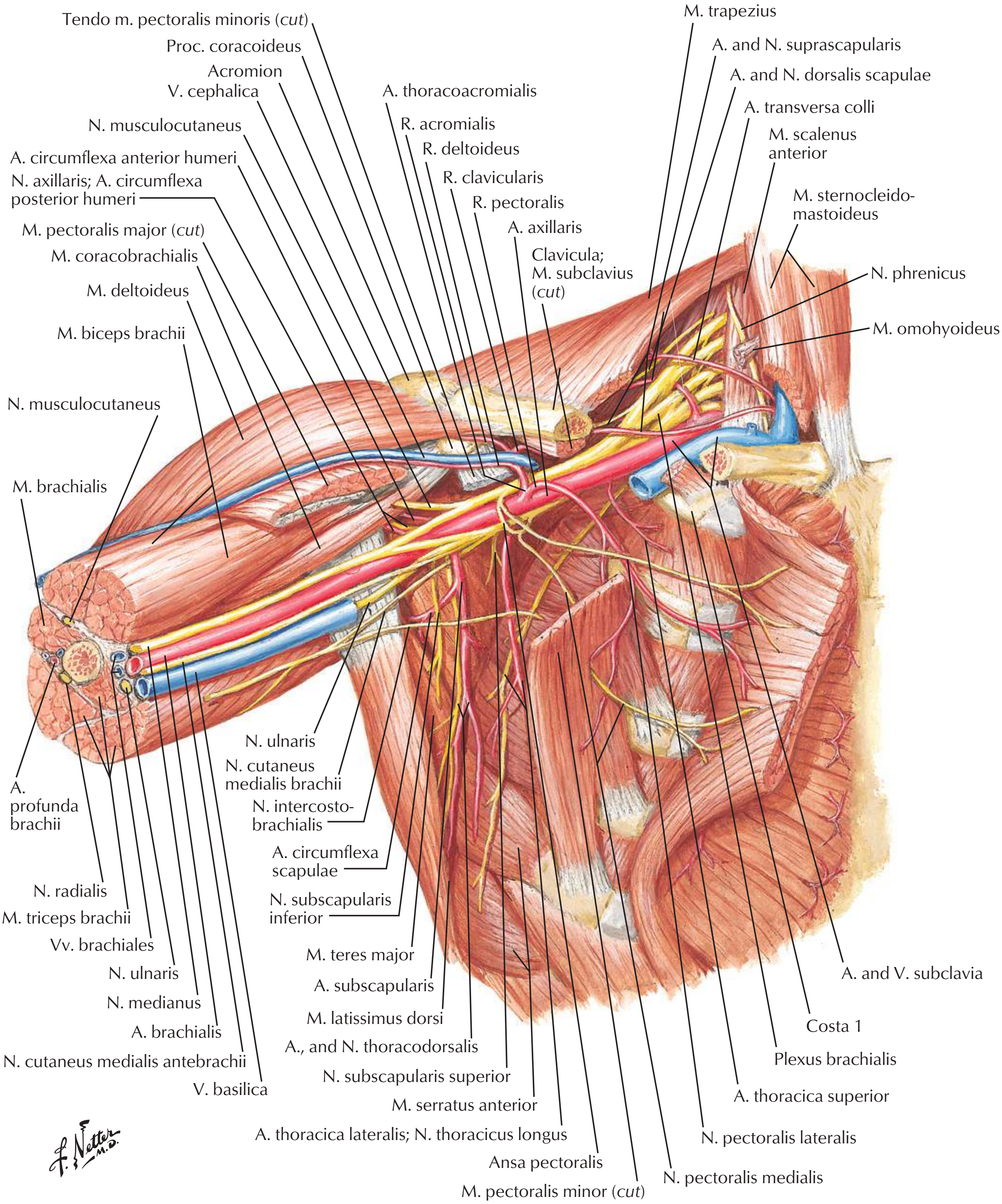
1, 2, 3 indicate 1st, 2nd, and 3rd parts of A. axillaris

Posterior view


Venter inferior m. omohyoidei
A. suprascapularis
R. acromialis a. thoracoacromialis
Levator scapulae
Acromion; Rete acromiale
A. dorsalis scapulae
A. suprascapularis
M. supraspinatus (*cut*)
Lig. transversum superius scapulae; Incisura scapulae
A. circumflexa posterior humeri (in Spatium axillare laterale); Rr. ascendens and descendens
Spina scapulae
M. infraspinatus (*cut*)
A. circumflexa scapulae
M. teres minor (*cut*)
M. teres major
Caption laterale
Caput laterale
Caput longum
M. triceps brachii
C.Machado M.D.

Axilla: Anterior View

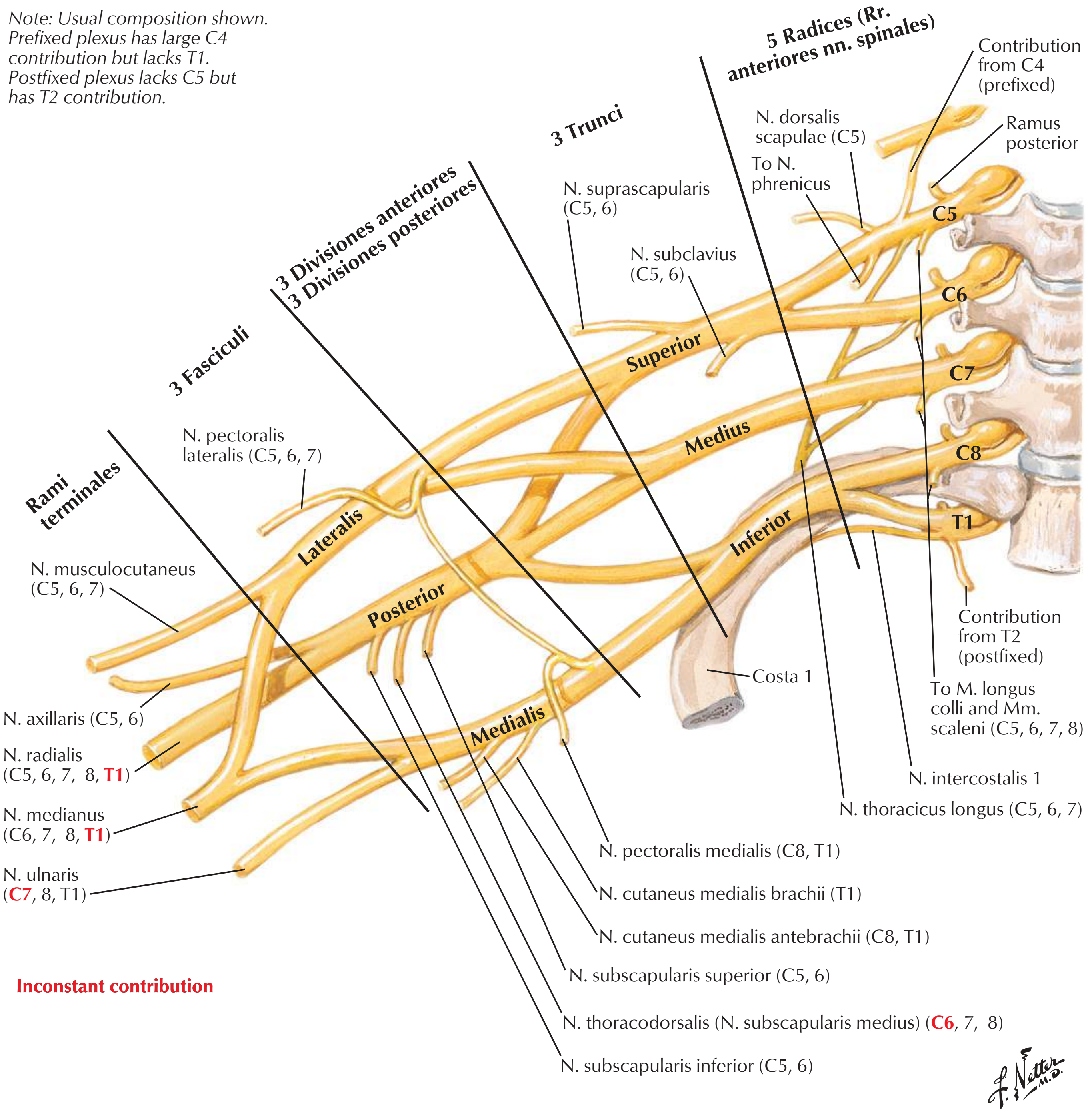
See also **Plates 414**, **417**



Tendo m. pectoralis minoris (*cut*)
Proc. coracoideus
Acromion
V. cephalica
N. musculocutaneus
A. circumflexa anterior humeri
N. axillaris; A. circumflexa posterior humeri
M. pectoralis major (*cut*)
M. coracobrachialis
M. deltoideus
M. biceps brachii
N. musculocutaneus
M. brachialis
A. profunda brachii
N. radialis
M. triceps brachii
Vv. brachiales
N. ulnaris
N. medianus
A. brachialis
N. cutaneus medialis antebrachii
V. basilica
N. ulnaris
N. cutaneus medialis brachii
N. intercostobrachialis
A. circumflexa scapulae
N. subscapularis inferior
M. teres major
A. subscapularis
M. latissimus dorsi
A., and N. thoracodorsalis
N. subscapularis superior
M. serratus anterior
A. thoracica lateralis; N. thoracicus longus
Ansa pectoralis
M. pectoralis minor (*cut*)
A. thoracoacromialis
R. acromialis
R. deltoideus
R. clavicularis
R. pectoralis
A. axillaris
Clavicula; M. subclavius (*cut*)
M. trapezius
A. and N. suprascapularis
A. and N. dorsalis scapulae
A. transversa colli
M. scalenus anterior
M. sternocleidomastoideus
N. phrenicus
M. omohyoideus
A. and V. subclavia
Costa 1
Plexus brachialis
A. thoracica superior
N. pectoralis lateralis
N. pectoralis medialis

Brachial Plexus: Schema

See also Plates 463, 464



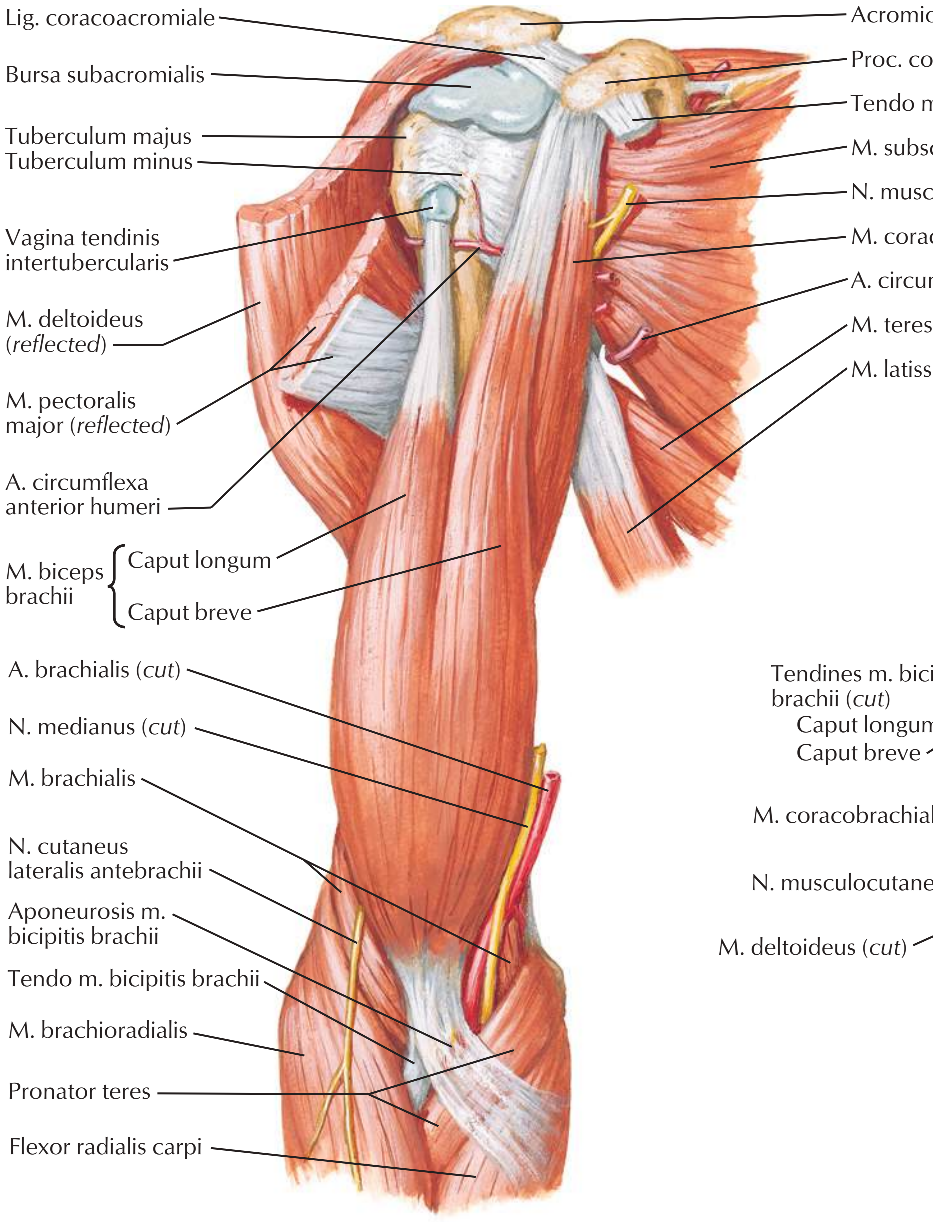
Note: Usual composition shown. Prefixed plexus has large C4 contribution but lacks T1. Postfixed plexus lacks C5 but has T2 contribution.

5 Radices (Rr. anteriores nn. spinales)
Contribution from C4 (prefixed)
Ramus posterior
N. dorsalis scapulae (C5)
To N. phrenicus
3 Trunci
N. suprascapularis (C5, 6)
N. subclavius (C5, 6)
3 Divisiones anteriores
3 Divisiones posteriores
3 Fasciculi
Rami terminales
N. pectoralis lateralis (C5, 6, 7)
C5
C6
C7
C8
T1
Superior
Medius
Inferior
Lateralis
Posterior
Medialis
N. musculocutaneus (C5, 6, 7)
N. axillaris (C5, 6)
N. radialis (C5, 6, 7, 8, T1)
N. medianus (C6, 7, 8, T1)
N. ulnaris (C7, 8, T1)
Costa 1
Contribution from T2 (postfixed)
To M. longus colli and Mm. scaleni (C5, 6, 7, 8)
N. intercostalis 1
N. thoracicus longus (C5, 6, 7)
N. pectoralis medialis (C8, T1)
N. cutaneus medialis brachii (T1)
N. cutaneus medialis antebrachii (C8, T1)
N. subscapularis superior (C5, 6)
N. thoracodorsalis (N. subscapularis medius) (C6, 7, 8)
N. subscapularis inferior (C5, 6)
F. Netter M.D.

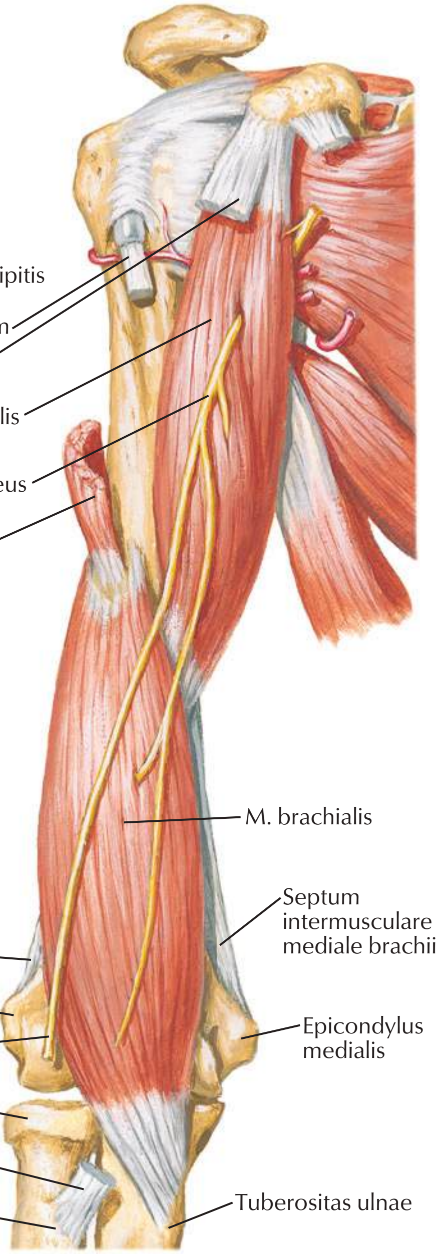
Inconstant contribution

Muscles of Arm: Anterior Views

See also Plates 415, 465


Lig. coracoacromiale
Bursa subacromialis
Tuberculum majus
Tuberculum minus
Vagina tendinis intertubercularis
M. deltoideus (*reflected*)
M. pectoralis major (*reflected*)
A. circumflexa anterior humeri
M. biceps brachii
Caput longum
Caput breve
A. brachialis (*cut*)
N. medianus (*cut*)
M. brachialis
N. cutaneus lateralis antebrachii
Aponeurosis m. bicipitis brachii
Tendo m. bicipitis brachii
M. brachioradialis
Pronator teres
Flexor radialis carpi
Acromion
Proc. coracoideus
Tendo m. pectoralis minoris (*cut*)
M. subscapularis
N. musculocutaneus (*cut*)
M. coracobrachialis
A. circumflexa scapulae (*cut*)
M. teres major
M. latissimus dorsi

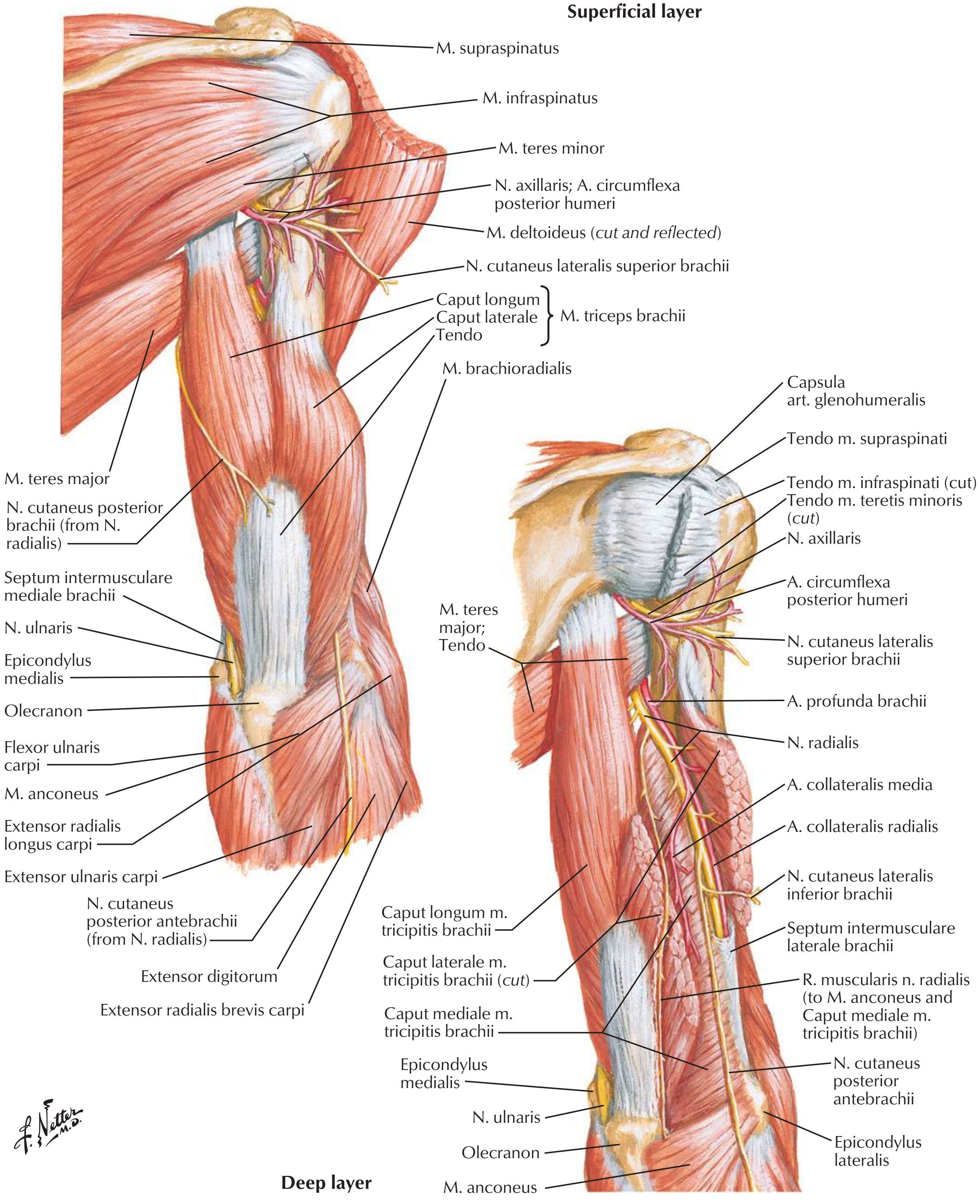
Superficial layer

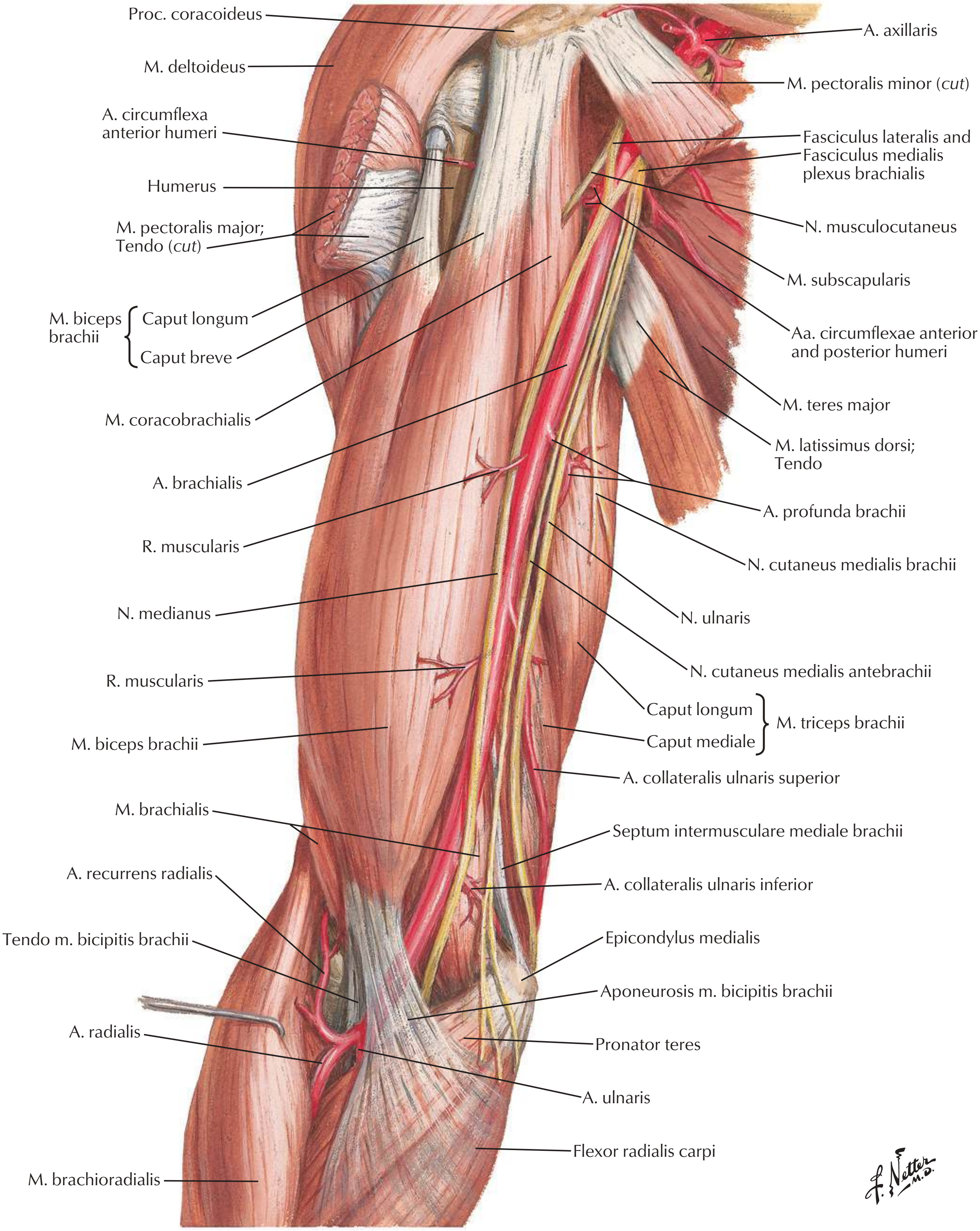

Tendines m. bicipitis brachii (*cut*)
Caput longum
Caput breve
M. coracobrachialis
N. musculocutaneus
M. deltoideus (*cut*)
M. brachialis
Septum intermusculare laterale brachii
Septum intermusculare mediale brachii
Epicondylus lateralis
Epicondylus medialis
N. cutaneus lateralis antebrachii
Caput radii
Tendo m. bicipitis brachii
Tuberositas radii
Tuberositas ulnae

Deep layer

Muscles of Arm: Posterior Views

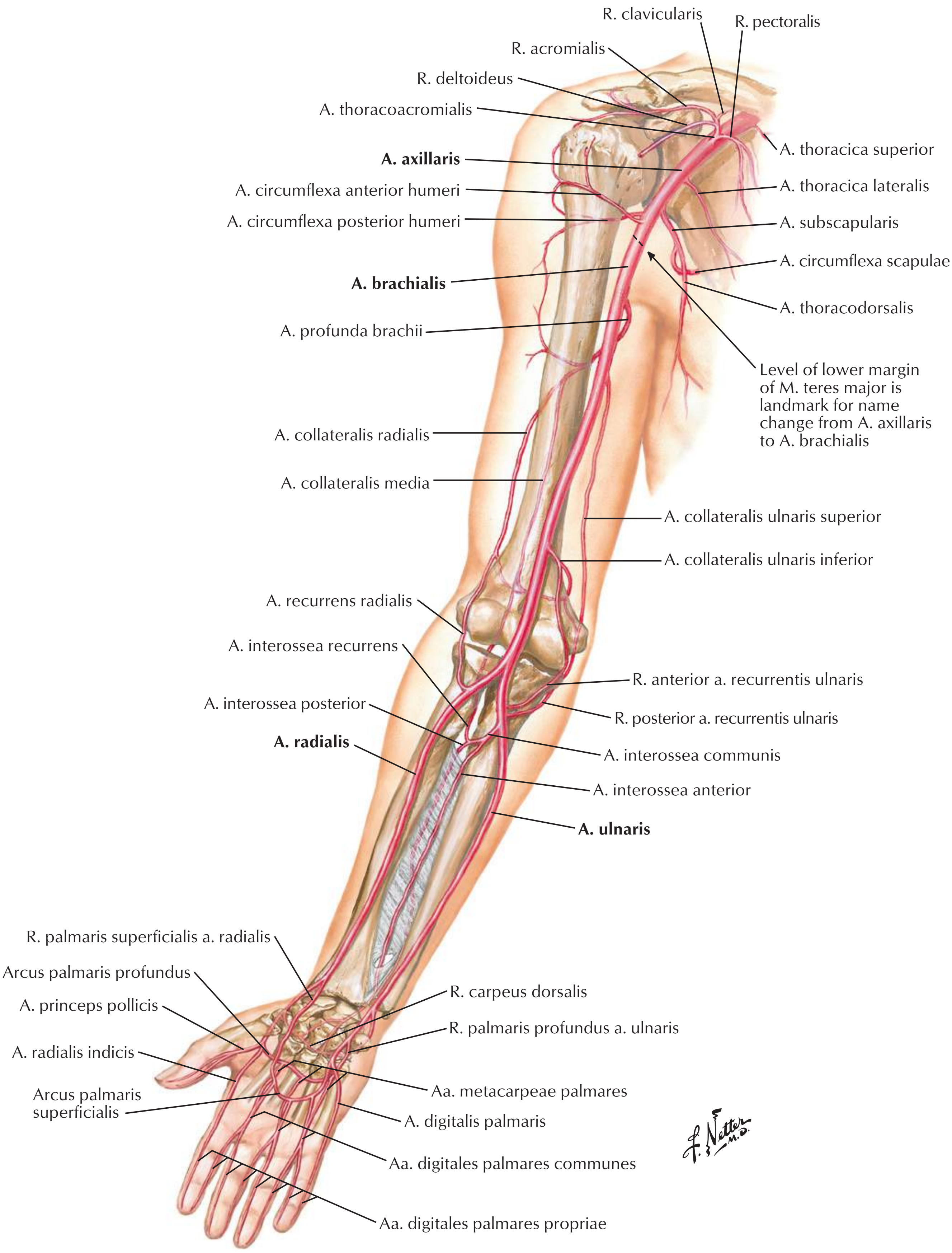
See also Plates 415, 468

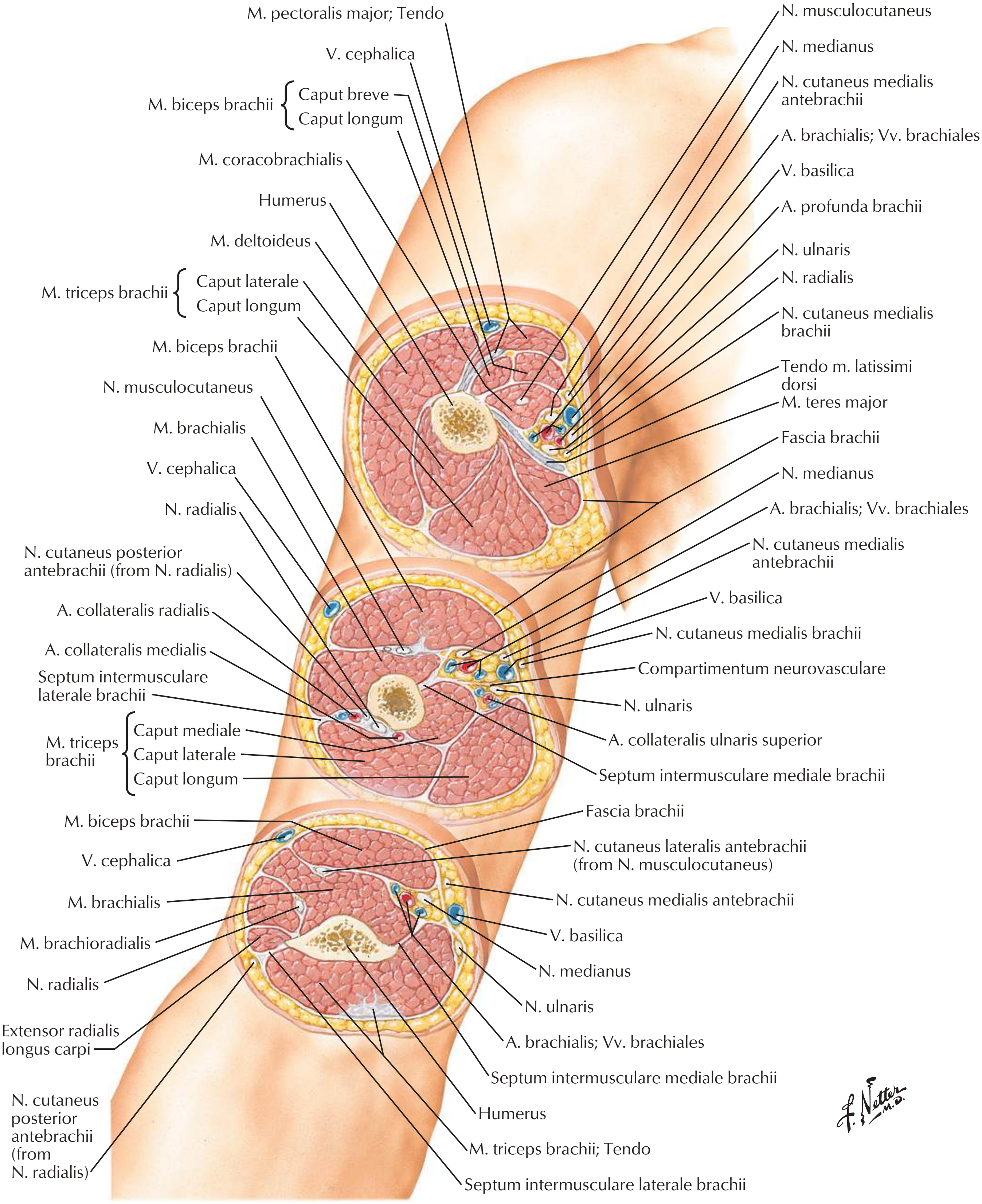

Superficial layer
M. supraspinatus
M. infraspinatus
M. teres minor
N. axillaris; A. circumflexa posterior humeri
M. deltoideus (*cut and reflected*)
N. cutaneus lateralis superior brachii
Caput longum
Caput laterale
Tendo
M. triceps brachii
M. brachioradialis
M. teres major
N. cutaneus posterior brachii (from N. radialis)
Septum intermusculare mediale brachii
N. ulnaris
Epicondylus medialis
Olecranon
Flexor ulnaris carpi
M. anconeus
Extensor radialis longus carpi
Extensor ulnaris carpi
N. cutaneus posterior antebrachii (from N. radialis)
Extensor digitorum
Extensor radialis brevis carpi
Capsula art. glenohumeralis
Tendo m. supraspinati
Tendo m. infraspinati (cut)
Tendo m. teretis minoris (*cut*)
N. axillaris
A. circumflexa posterior humeri
M. teres major; Tendo
N. cutaneus lateralis superior brachii
A. profunda brachii
N. radialis
A. collateralis media
A. collateralis radialis
N. cutaneus lateralis inferior brachii
Caput longum m. tricipitis brachii
Septum intermusculare laterale brachii
Caput laterale m. tricipitis brachii (*cut*)
R. muscularis n. radialis (to M. anconeus and Caput mediale m. tricipitis brachii)
Caput mediale m. tricipitis brachii
Epicondylus medialis
N. cutaneus posterior antebrachii
N. ulnaris
Epicondylus lateralis
Olecranon
M. anconeus
Deep layer


Proc. coracoideus
M. deltoideus
A. circumflexa anterior humeri
Humerus
M. pectoralis major; Tendo (cut)
M. biceps brachii
Caput longum
Caput breve
M. coracobrachialis
A. brachialis
R. muscularis
N. medianus
R. muscularis
M. biceps brachii
M. brachialis
A. recurrens radialis
Tendo m. bicipitis brachii
A. radialis
M. brachioradialis
A. axillaris
M. pectoralis minor (cut)
Fasciculus lateralis and Fasciculus medialis plexus brachialis
N. musculocutaneus
M. subscapularis
Aa. circumflexae anterior and posterior humeri
M. teres major
M. latissimus dorsi; Tendo
A. profunda brachii
N. cutaneus medialis brachii
N. ulnaris
N. cutaneus medialis antebrachii
Caput longum
Caput mediale
M. triceps brachii
A. collateralis ulnaris superior
Septum intermusculare mediale brachii
A. collateralis ulnaris inferior
Epicondylus medialis
Aponeurosis m. bicipitis brachii
Pronator teres
A. ulnaris
Flexor radialis carpi

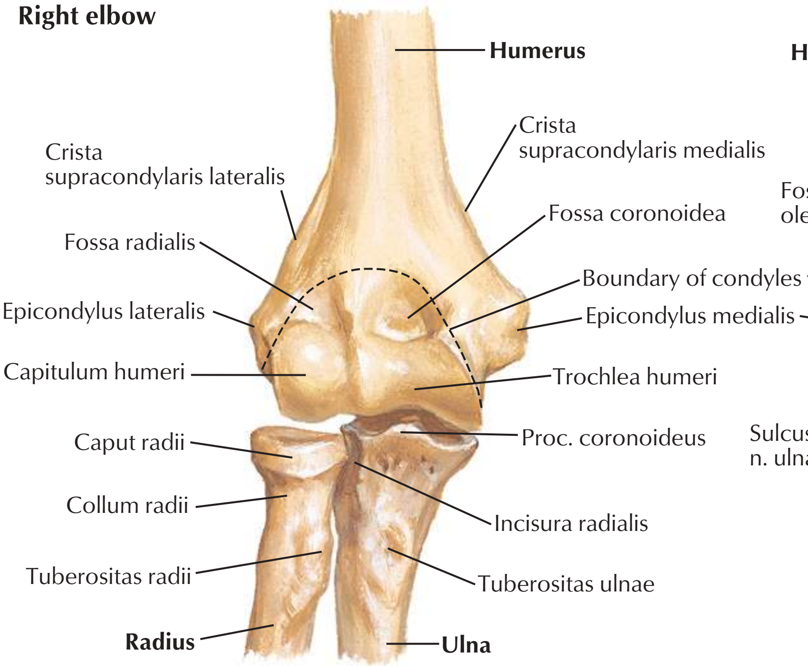
Arteries of Arm and Proximal Forearm

See also **Plates** 437, 456

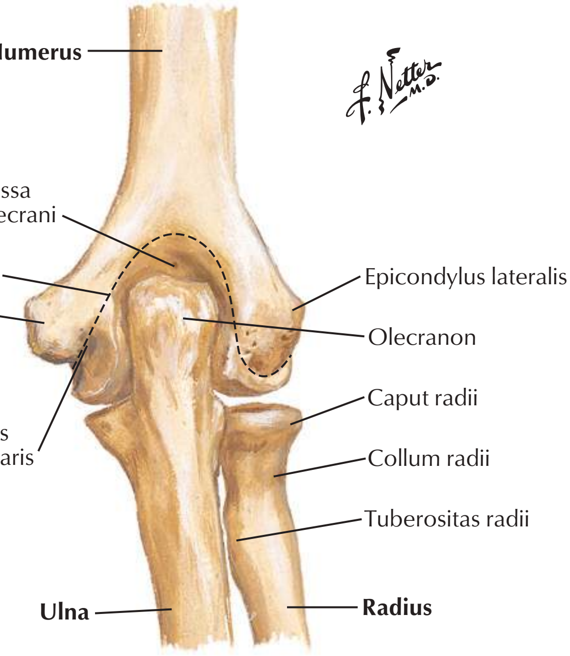

R. clavicularis
R. pectoralis
R. acromialis
R. deltoideus
A. thoracoacromialis
A. thoracica superior
A. axillaris
A. circumflexa anterior humeri
A. thoracica lateralis
A. circumflexa posterior humeri
A. subscapularis
A. circumflexa scapulae
A. brachialis
A. thoracodorsalis
A. profunda brachii
Level of lower margin of M. teres major is landmark for name change from A. axillaris to A. brachialis
A. collateralis radialis
A. collateralis media
A. collateralis ulnaris superior
A. collateralis ulnaris inferior
A. recurrens radialis
A. interossea recurrens
R. anterior a. recurrentis ulnaris
A. interossea posterior
R. posterior a. recurrentis ulnaris
A. radialis
A. interossea communis
A. interossea anterior
A. ulnaris
R. palmaris superficialis a. radialis
Arcus palmaris profundus
R. carpeus dorsalis
A. princeps pollicis
R. palmaris profundus a. ulnaris
A. radialis indicis
Aa. metacarpeae palmares
Arcus palmaris superficialis
A. digitalis palmaris
Aa. digitales palmares communes
Aa. digitales palmares propriae
F. Netter M.D.


M. pectoralis major; Tendo
V. cephalica
M. biceps brachii
Caput breve
Caput longum
M. coracobrachialis
Humerus
M. deltoideus
M. triceps brachii
Caput laterale
Caput longum
M. biceps brachii
N. musculocutaneus
M. brachialis
V. cephalica
N. radialis
N. cutaneus posterior antebrachii (from N. radialis)
A. collateralis radialis
A. collateralis medialis
Septum intermusculare laterale brachii
M. triceps brachii
Caput mediale
Caput laterale
Caput longum
M. biceps brachii
V. cephalica
M. brachialis
M. brachioradialis
N. radialis
Extensor radialis longus carpi
N. cutaneus posterior antebrachii (from N. radialis)
N. musculocutaneus
N. medianus
N. cutaneus medialis antebrachii
A. brachialis; Vv. brachiales
V. basilica
A. profunda brachii
N. ulnaris
N. radialis
N. cutaneus medialis brachii
Tendo m. latissimi dorsi
M. teres major
Fascia brachii
N. medianus
A. brachialis; Vv. brachiales
N. cutaneus medialis antebrachii
V. basilica
N. cutaneus medialis brachii
Compartimentum neurovasculare
N. ulnaris
A. collateralis ulnaris superior
Septum intermusculare mediale brachii
Fascia brachii
N. cutaneus lateralis antebrachii (from N. musculocutaneus)
N. cutaneus medialis antebrachii
V. basilica
N. medianus
N. ulnaris
A. brachialis; Vv. brachiales
Septum intermusculare mediale brachii
Humerus
M. triceps brachii; Tendo
Septum intermusculare laterale brachii
F. Netter M.D.

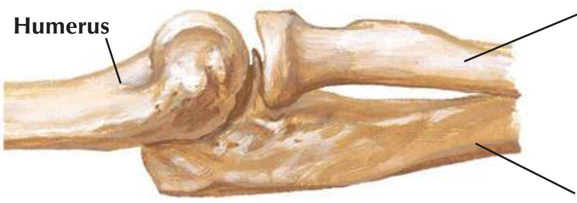
Right elbow


Humerus
Crista supracondylaris medialis
Crista supracondylaris lateralis
Fossa coronoidea
Fossa radialis
Boundary of condyles
Epicondylus lateralis
Epicondylus medialis
Capitulum humeri
Trochlea humeri
Caput radii
Proc. coronoideus
Collum radii
Incisura radialis
Tuberositas radii
Tuberositas ulnae
Radius
Ulna

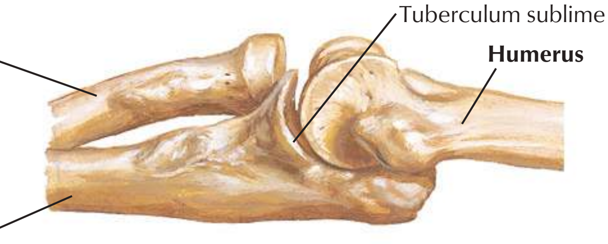
In extension: anterior view


Humerus
F. Netter M.D.
Fossa olecrani
Epicondylus lateralis
Olecranon
Caput radii
Sulcus n. ulnaris
Collum radii
Tuberositas radii
Ulna
Radius

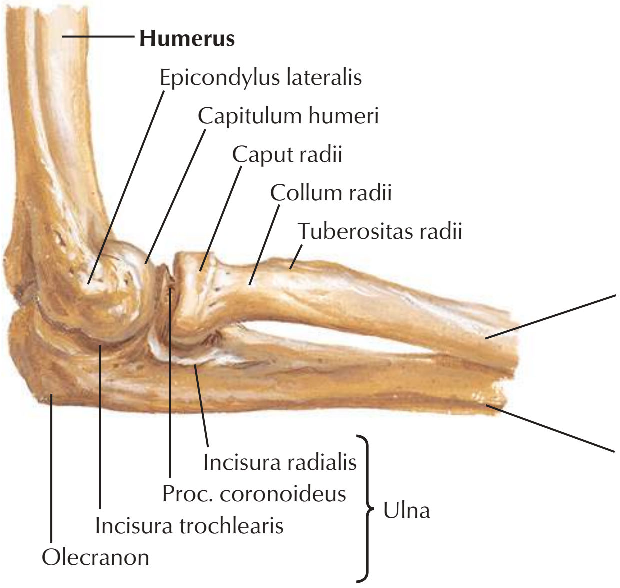
In extension: posterior view


Humerus
Radius
Ulna

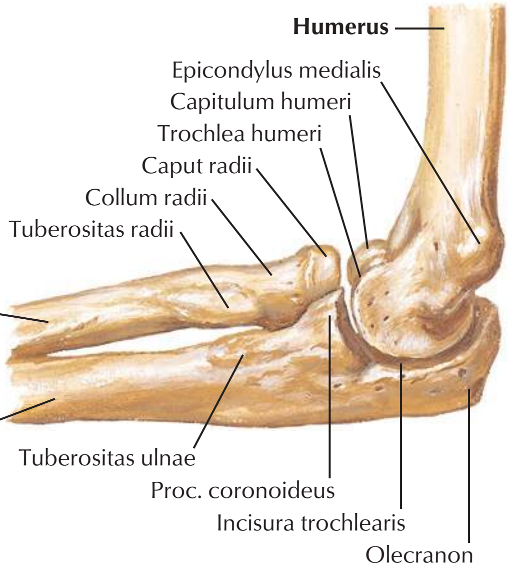
In extension: lateral view


Tuberculum sublime
Humerus
Radius
Ulna

In extension: medial view

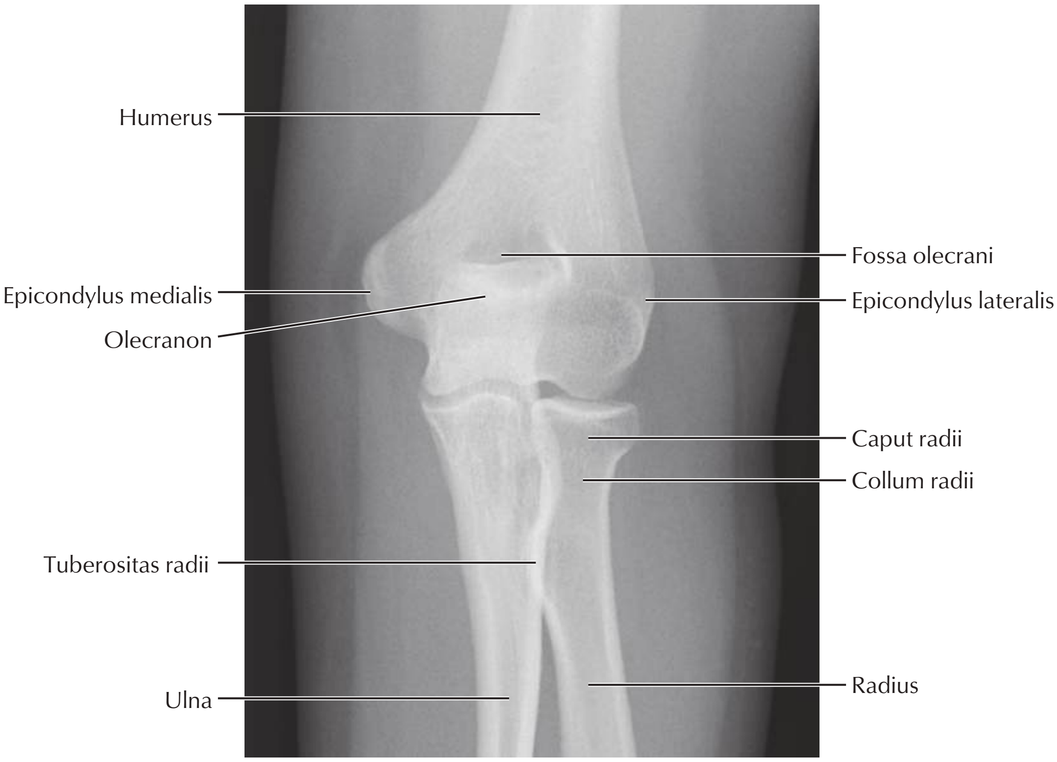

Humerus
Epicondylus lateralis
Capitulum humeri
Caput radii
Collum radii
Tuberositas radii
Radius
Incisura radialis
Proc. coronoideus
Incisura trochlearis
Olecranon
Ulna

In 90 degrees of flexion: lateral view

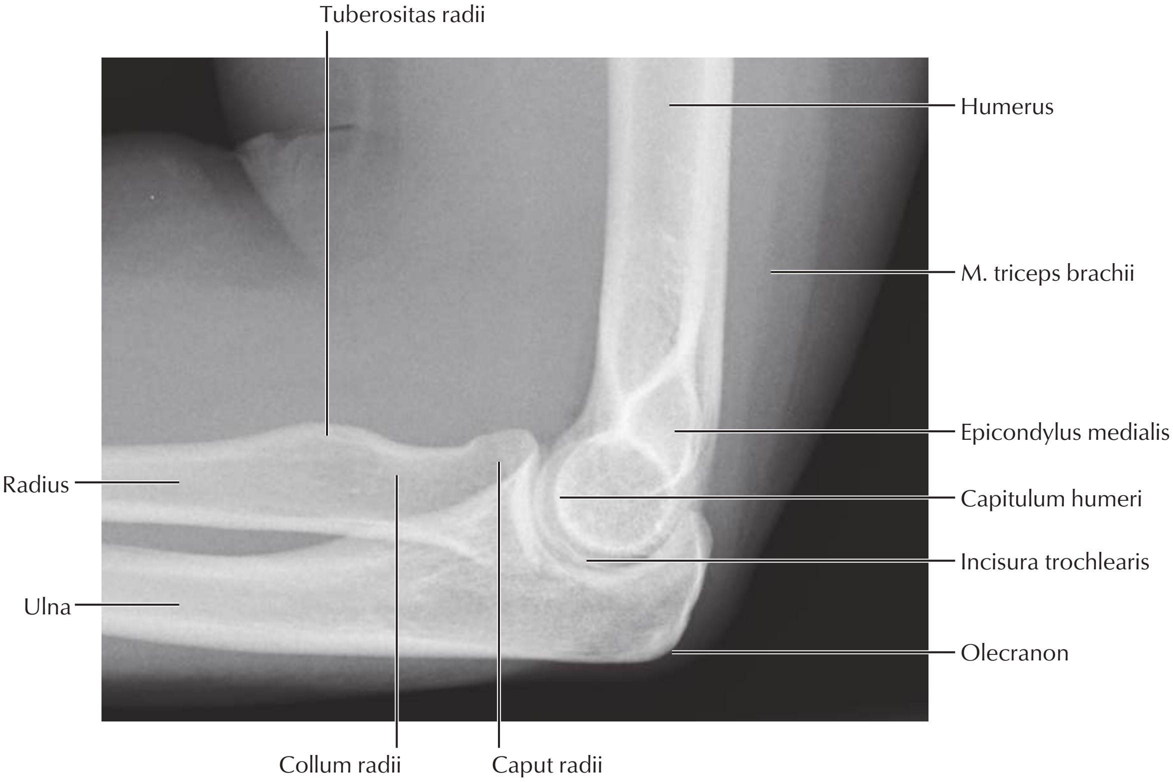

Humerus
Epicondylus medialis
Capitulum humeri
Trochlea humeri
Caput radii
Collum radii
Tuberositas radii
Radius
Ulna
Tuberositas ulnae
Proc. coronoideus
Incisura trochlearis
Olecranon

In 90 degrees of flexion: medial view

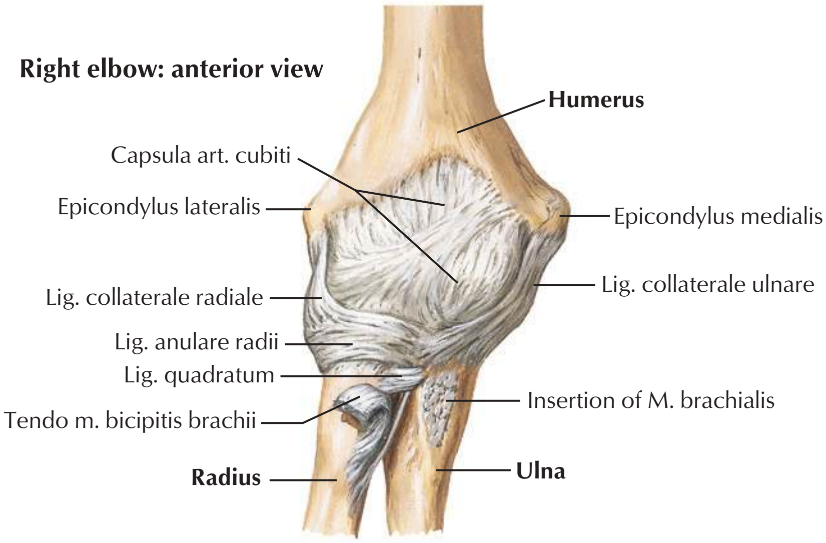
Anteroposterior view


Humerus
Fossa olecrani
Epicondylus medialis
Epicondylus lateralis
Olecranon
Caput radii
Collum radii
Tuberositas radii
Ulna
Radius

Lateral view

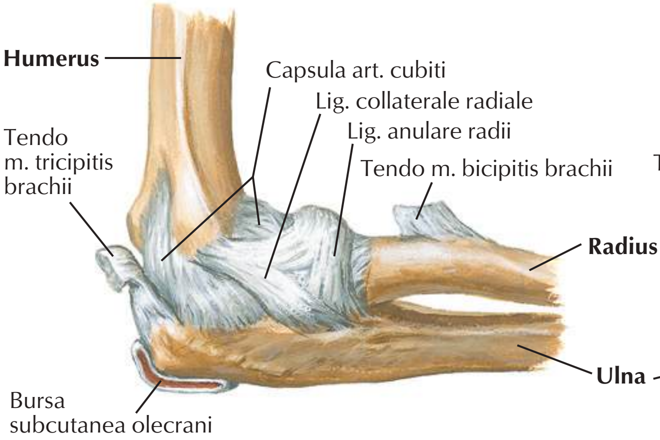

Tuberositas radii
Humerus
M. triceps brachii
Epicondylus medialis
Radius
Capitulum humeri
Incisura trochlearis
Ulna
Olecranon
Collum radii
Caput radii

Right elbow: anterior view

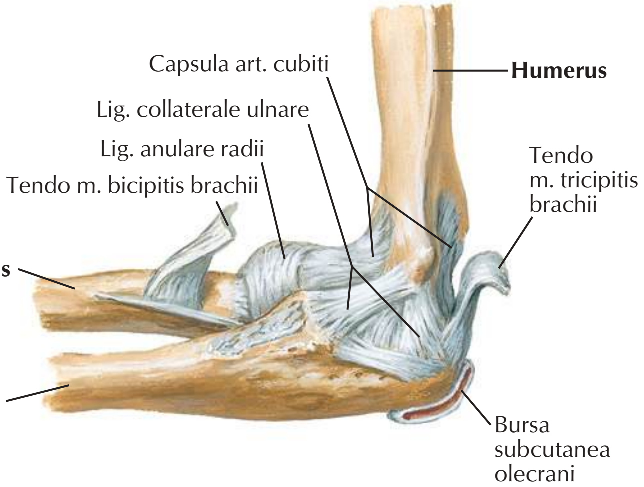

Humerus
Capsula art. cubiti
Epicondylus lateralis
Epicondylus medialis
Lig. collaterale radiale
Lig. collaterale ulnare
Lig. anulare radii
Lig. quadratum
Insertion of M. brachialis
Tendo m. bicipitis brachii
Radius
Ulna

F. Netter M.D.

In 90 degrees of flexion: lateral view

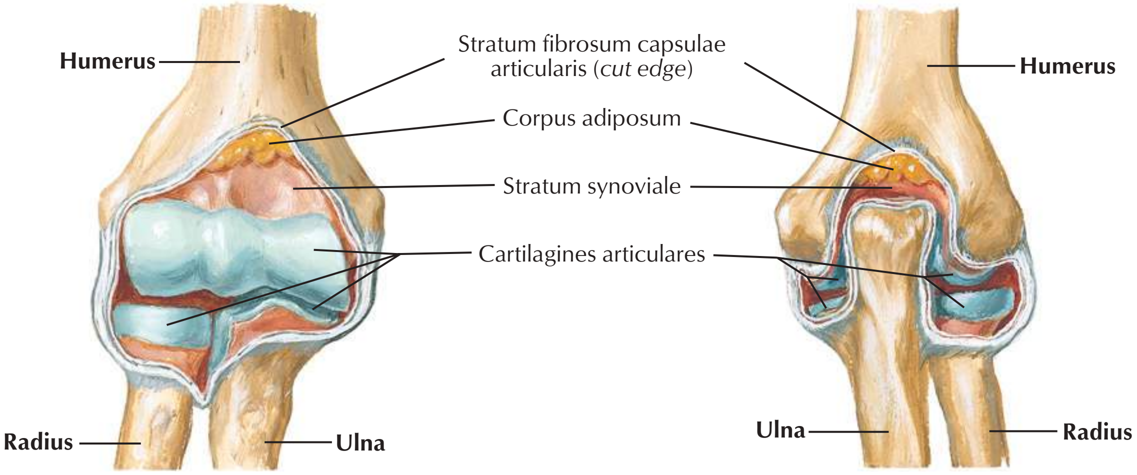

Humerus
Capsula art. cubiti
Lig. collaterale radiale
Lig. anulare radii
Tendo m. tricipitis brachii
Tendo m. bicipitis brachii
Radius
Ulna
Bursa subcutanea olecrani

In 90 degrees of flexion: medial view


Capsula art. cubiti
Humerus
Lig. collaterale ulnare
Lig. anulare radii
Tendo m. tricipitis brachii
Tendo m. bicipitis brachii
Radius
Ulna
Bursa subcutanea olecrani

Opened joint: anterior view

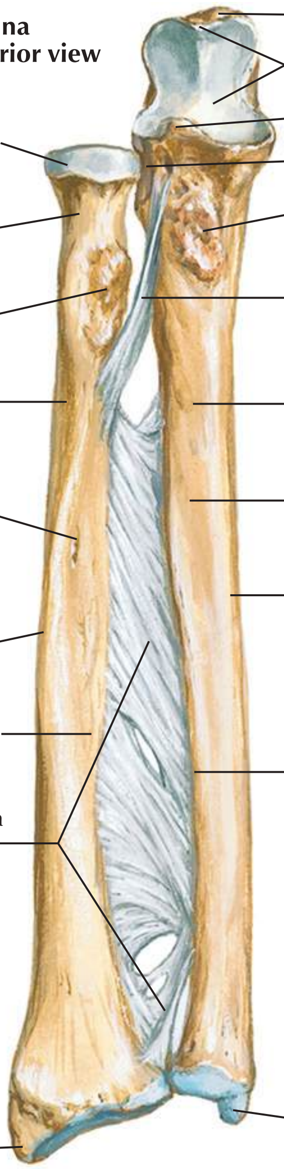
Opened joint: posterior view


Humerus
Stratum fibrosum capsulae articularis (*cut edge*)
Humerus
Corpus adiposum
Stratum synoviale
Cartilagines articulares
Radius
Ulna
Ulna
Radius

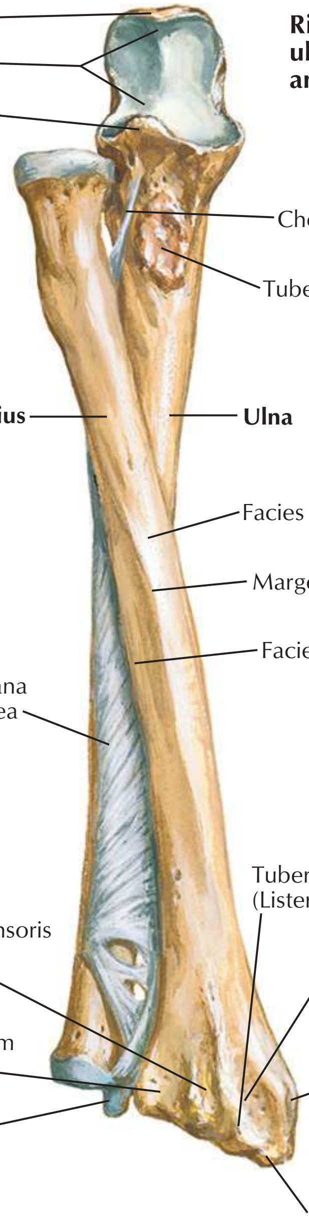
Bones of Forearm

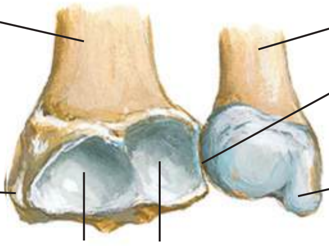
See also Plate 440

Right radius and ulna in supination: anterior view

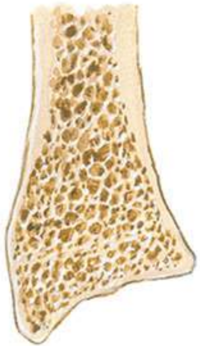

Olecranon
Incisura trochlearis
Proc. coronoideus
Caput radii
Incisura radialis
Tuberositas ulnae
Collum radii
Tuberositas radii
Chorda obliqua
Radius
Ulna
Facies anterior
Facies anterior
Margo anterior
Margo anterior
Margo interosseus
Margo interosseus
Membrana interossea
Proc. styloideus radii
Proc. styloideus ulnae

Right radius and ulna in pronation: anterior view


Olecranon
Incisura trochlearis
Proc. coronoideus
Chorda obliqua
Tuberositas ulnae
Radius
Ulna
Facies lateralis
Margo posterior
Facies posterior
Membrana interossea
Tuberculum dorsale (Listeri)
Sulcus tendinis extensoris longi pollicis
Sulcus tendinum extensorum radialium (longi and brevis) carpi
Sulcus tendinum extensorum digitorum and indicis
Sulcus tendinum extensoris brevis pollicis and abductoris longi pollicis
Proc. styloideus ulnae
Proc. styloideus radii

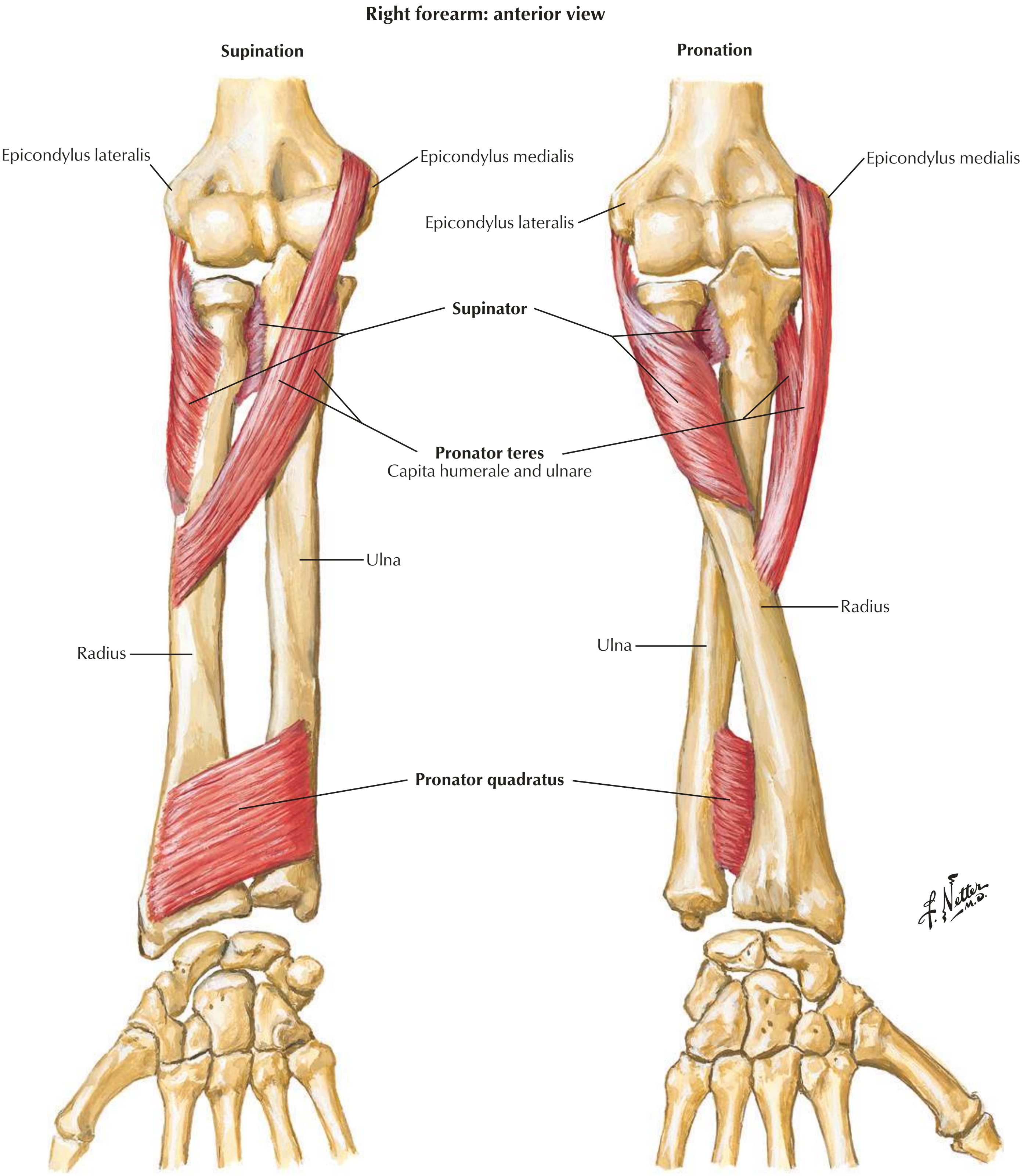

Radius
Ulna
Incisura ulnaris
Proc. styloideus radii
Proc. styloideus ulnae
Articulation with os scaphoideum
Articulation with os lunatum

Facies articularis carpea



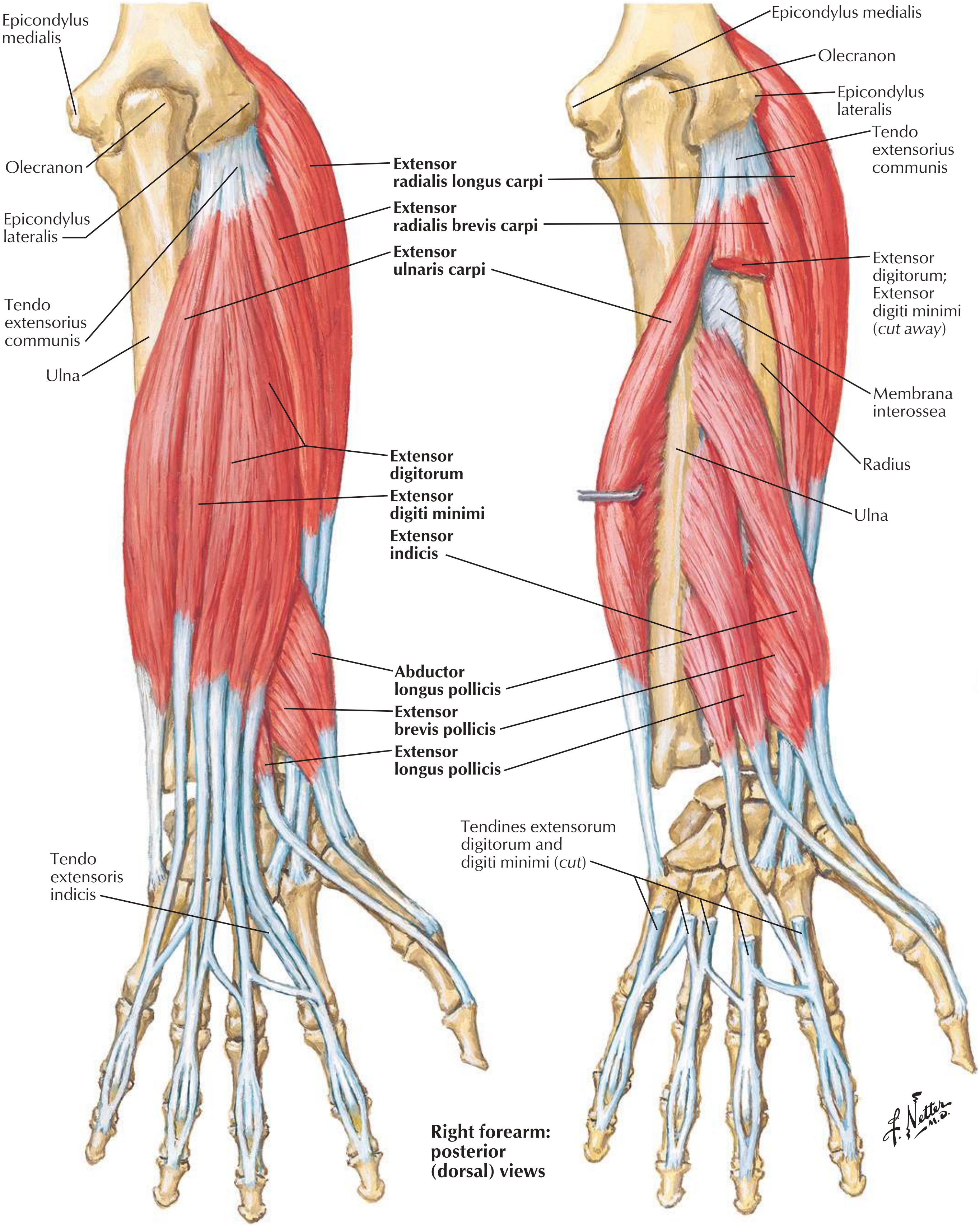
Coronal section of radius demonstrates how thickness of cortical bone of body of radius diminishes to thin layer over cancellous bone at distal end

Right forearm: anterior view

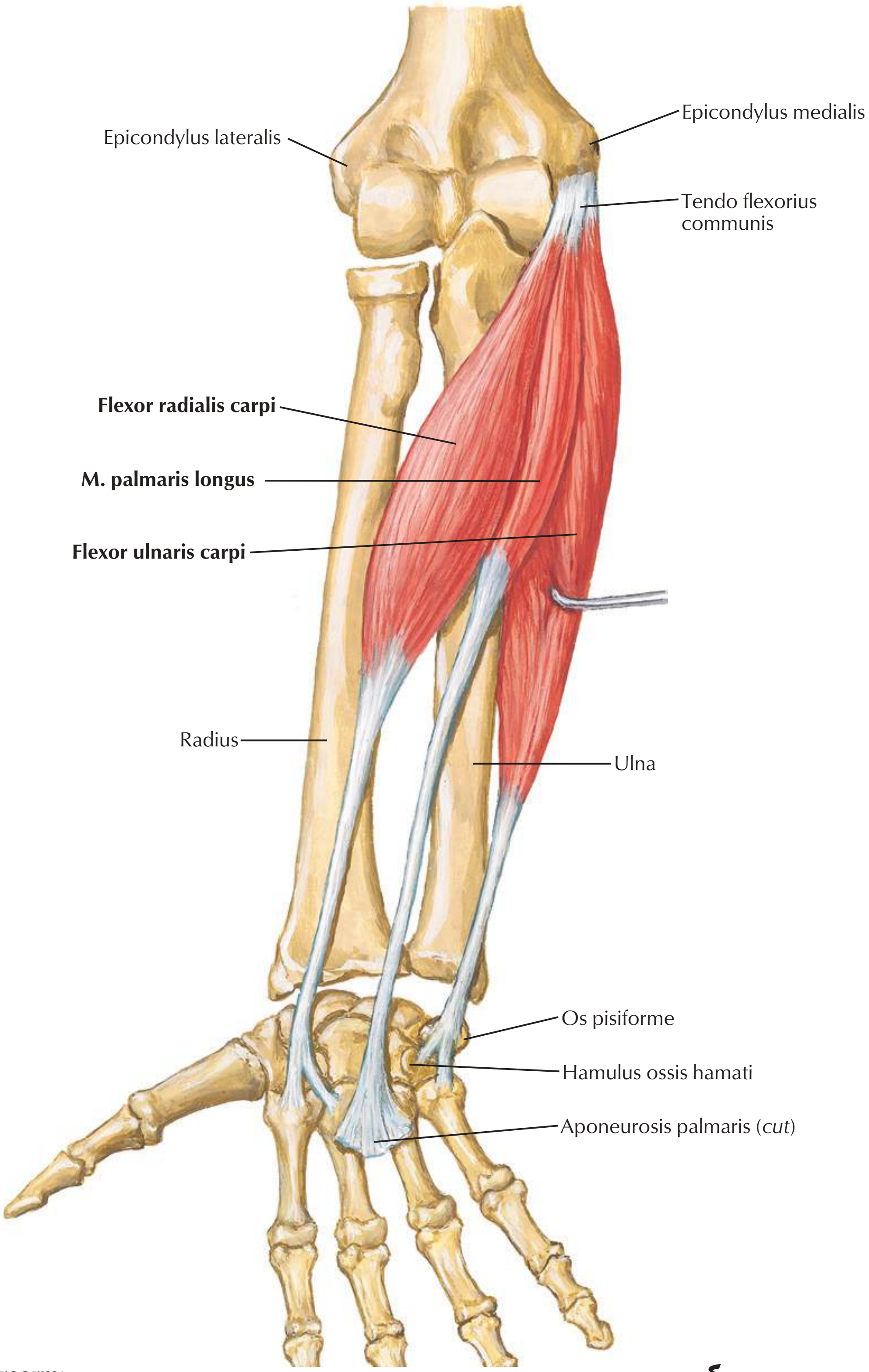

Supination
Pronation
Epicondylus lateralis
Epicondylus medialis
Epicondylus medialis
Epicondylus lateralis
Supinator
Pronator teres
Capita humerale and ulnare
Ulna
Radius
Radius
Ulna
Pronator quadratus
F. Netter M.D.

Individual Muscles of Forearm: Extensors of Wrist and Digits

See also Plate 441

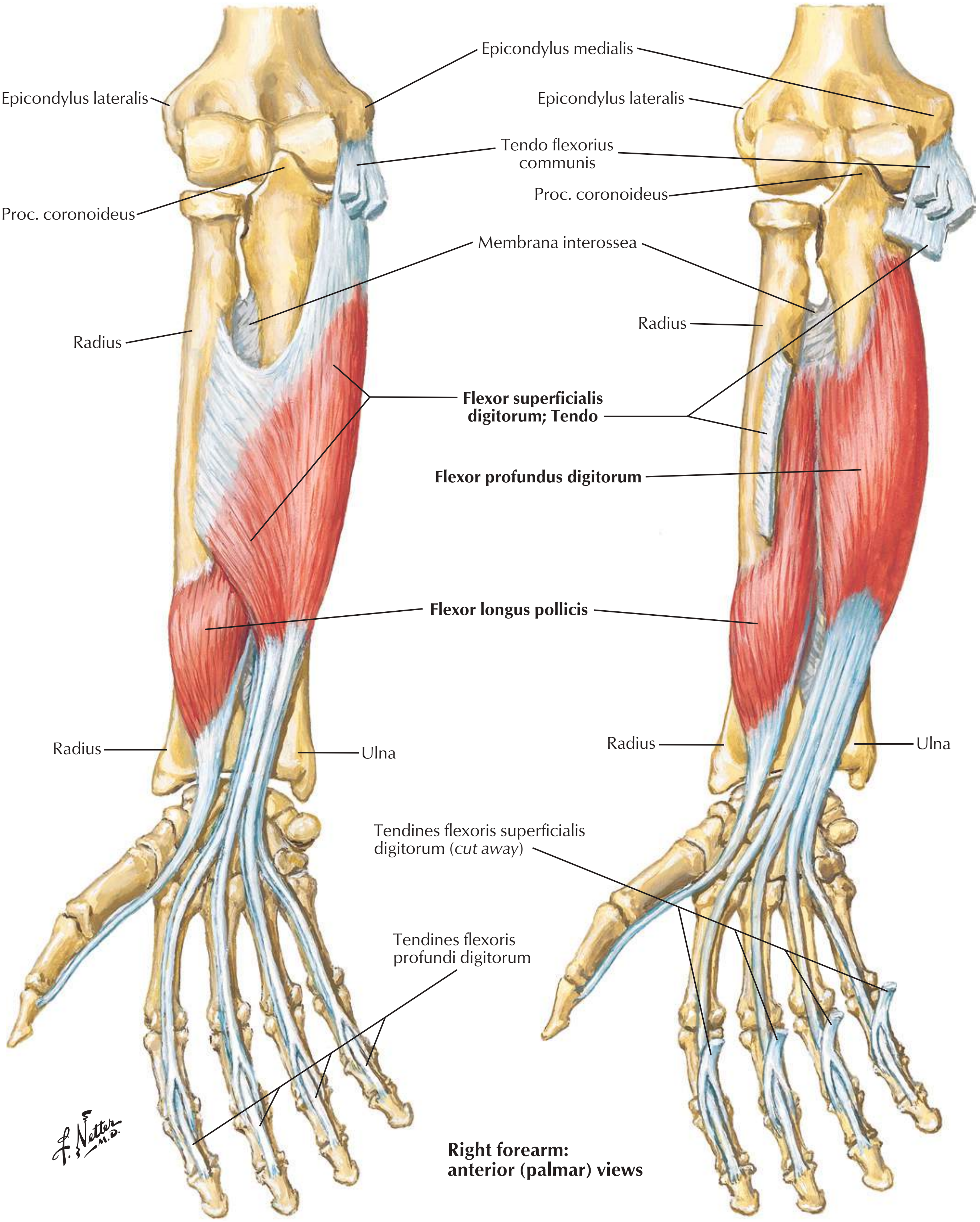

Epicondylus medialis
Olecranon
Epicondylus lateralis
Tendo extensorius communis
Ulna
Extensor radialis longus carpi
Extensor radialis brevis carpi
Extensor ulnaris carpi
Extensor digitorum
Extensor digiti minimi
Extensor indicis
Abductor longus pollicis
Extensor brevis pollicis
Extensor longus pollicis
Tendo extensoris indicis
Epicondylus medialis
Olecranon
Epicondylus lateralis
Tendo extensorius communis
Extensor digitorum; Extensor digiti minimi (*cut away*)
Membrana interossea
Radius
Ulna
Tendines extensorum digitorum and digiti minimi (*cut*)

Right forearm: posterior (dorsal) views


Epicondylus lateralis
Epicondylus medialis
Tendo flexorius communis
Flexor radialis carpi
M. palmaris longus
Flexor ulnaris carpi
Radius
Ulna
Os pisiforme
Hamulus ossis hamati
Aponeurosis palmaris (*cut*)

Right forearm:
anterior (palmar) view

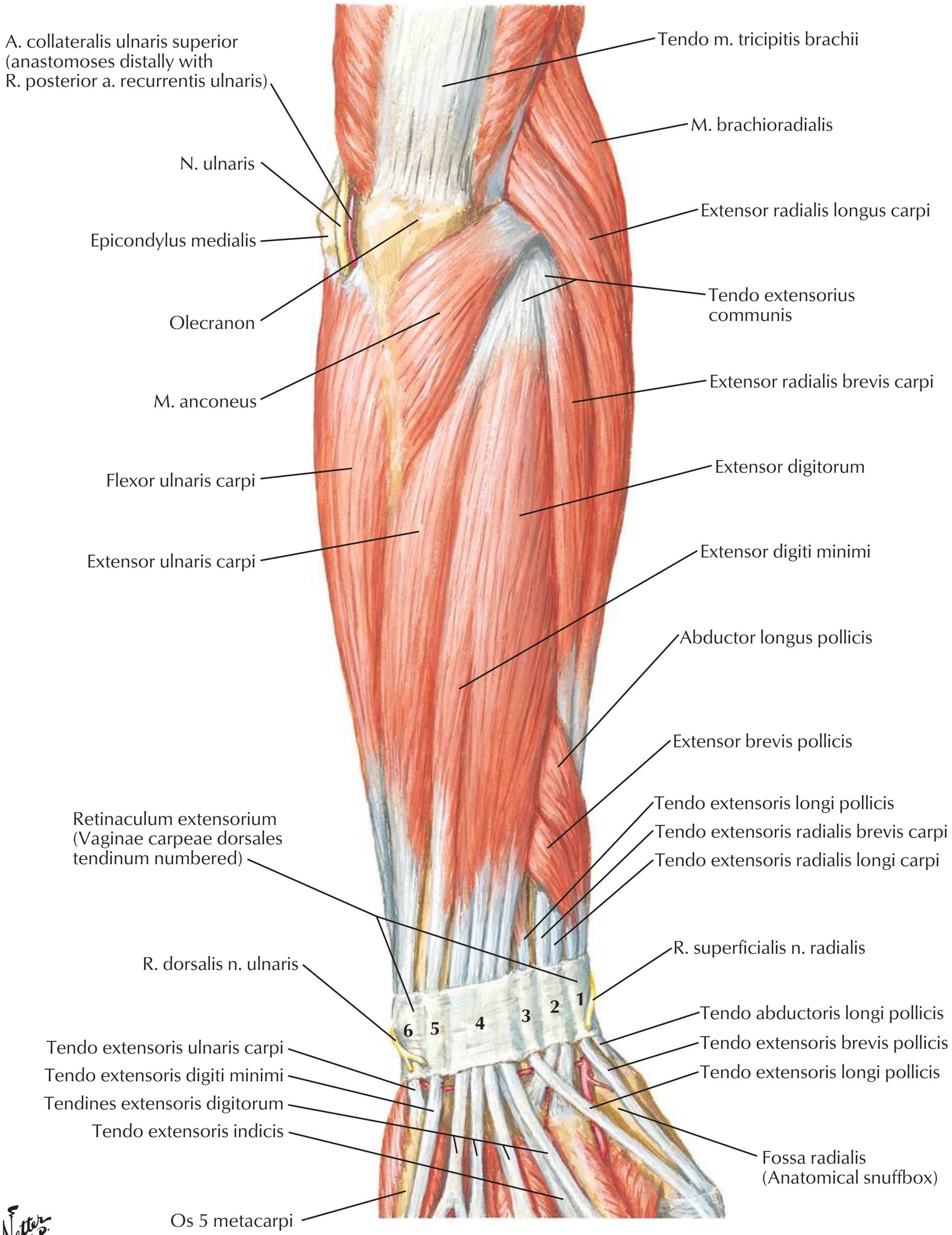
F. Netter M.D.


Epicondylus medialis
Epicondylus lateralis
Epicondylus lateralis
Tendo flexorius communis
Proc. coronoideus
Proc. coronoideus
Membrana interossea
Radius
Radius
Flexor superficialis digitorum; Tendo
Flexor profundus digitorum
Flexor longus pollicis
Radius
Ulna
Radius
Ulna
Tendines flexoris superficialis digitorum (*cut away*)
Tendines flexoris profundi digitorum
F. Netter M.D.

Right forearm: anterior (palmar) views

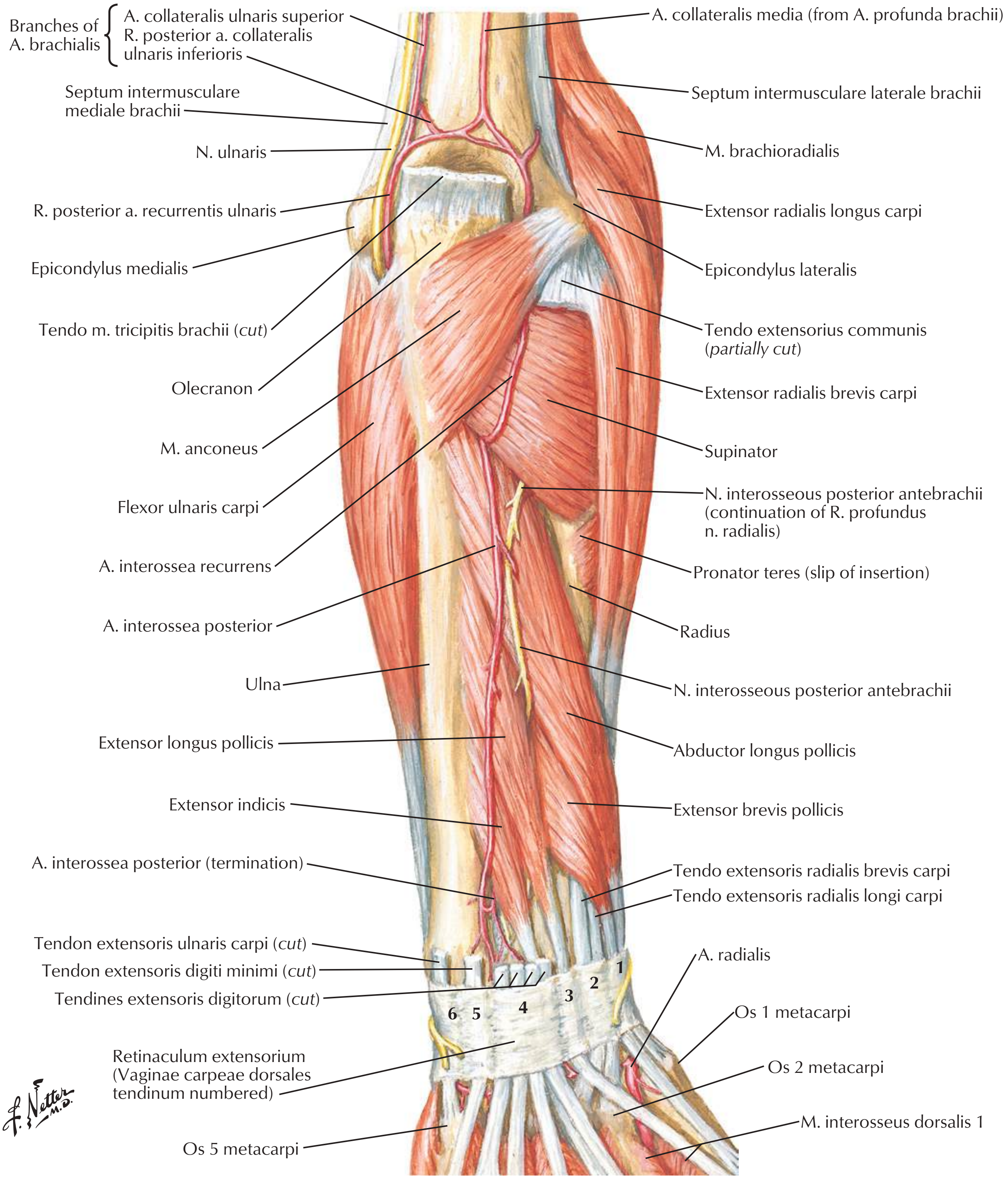
Muscles of Forearm (Superficial Layer): Posterior View

See also Plates 460, 469


A. collateralis ulnaris superior (anastomoses distally with R. posterior a. recurrentis ulnaris)
N. ulnaris
Epicondylus medialis
Olecranon
M. anconeus
Flexor ulnaris carpi
Extensor ulnaris carpi
Retinaculum extensorium (Vaginae carpeae dorsales tendinum numbered)
R. dorsalis n. ulnaris
Tendo extensoris ulnaris carpi
Tendo extensoris digiti minimi
Tendines extensoris digitorum
Tendo extensoris indicis
Os 5 metacarpi
Tendo m. tricipitis brachii
M. brachioradialis
Extensor radialis longus carpi
Tendo extensorius communis
Extensor radialis brevis carpi
Extensor digitorum
Extensor digiti minimi
Abductor longus pollicis
Extensor brevis pollicis
Tendo extensoris longi pollicis
Tendo extensoris radialis brevis carpi
Tendo extensoris radialis longi carpi
R. superficialis n. radialis
Tendo abductoris longi pollicis
Tendo extensoris brevis pollicis
Tendo extensoris longi pollicis
Fossa radialis (Anatomical snuffbox)
6
5
4
3
2
1

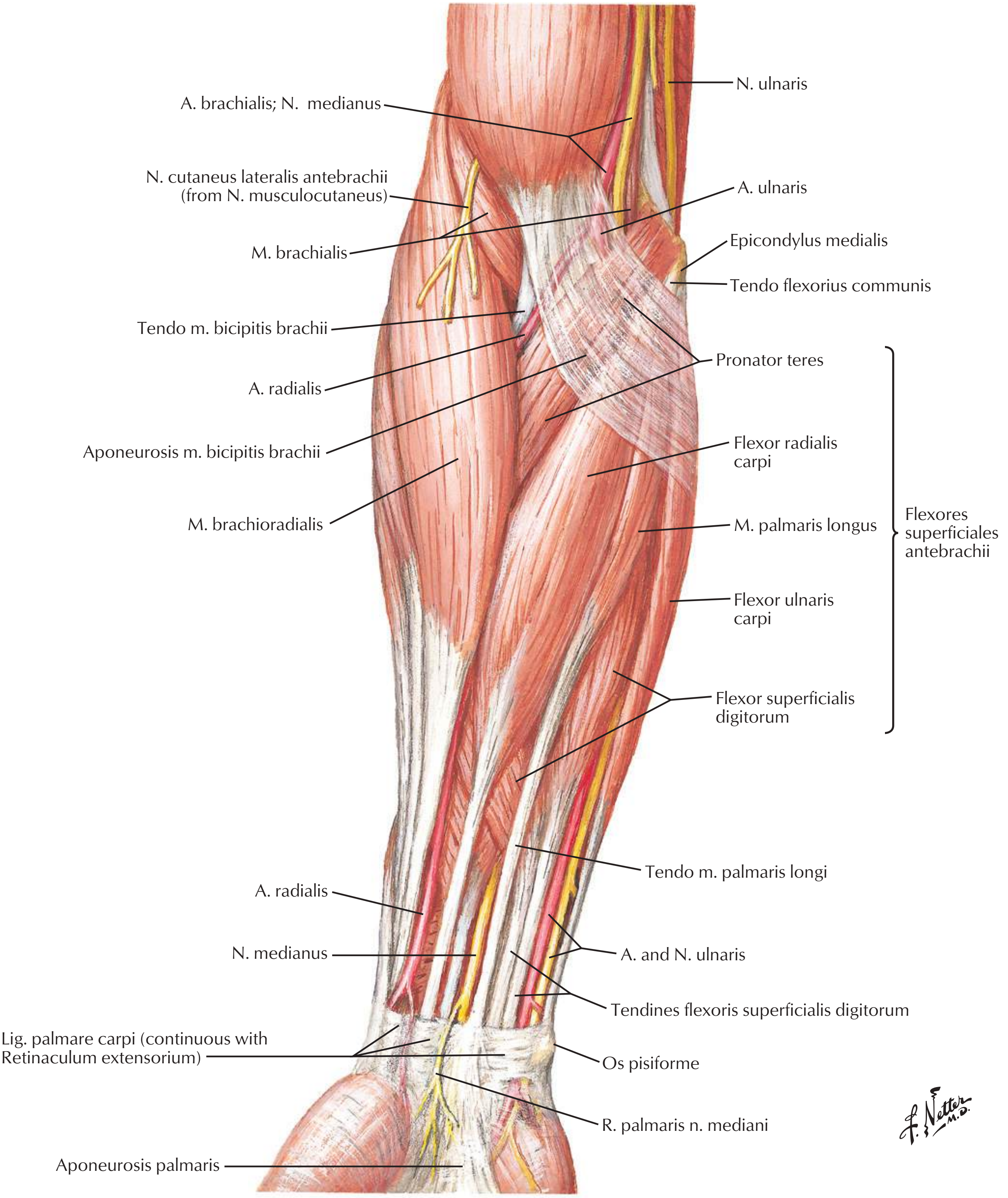
Muscles of Forearm (Deeper Layer): Posterior View

See also Plate 460


Branches of A. brachialis
A. collateralis ulnaris superior
R. posterior a. collateralis ulnaris inferioris
A. collateralis media (from A. profunda brachii)
Septum intermusculare mediale brachii
Septum intermusculare laterale brachii
N. ulnaris
M. brachioradialis
R. posterior a. recurrentis ulnaris
Extensor radialis longus carpi
Epicondylus medialis
Epicondylus lateralis
Tendo m. tricipitis brachii (*cut*)
Tendo extensorius communis (*partially cut*)
Olecranon
Extensor radialis brevis carpi
M. anconeus
Supinator
Flexor ulnaris carpi
N. interosseous posterior antebrachii (continuation of R. profundus n. radialis)
A. interossea recurrens
Pronator teres (slip of insertion)
A. interossea posterior
Radius
Ulna
N. interosseous posterior antebrachii
Extensor longus pollicis
Abductor longus pollicis
Extensor indicis
Extensor brevis pollicis
A. interossea posterior (termination)
Tendo extensoris radialis brevis carpi
Tendo extensoris radialis longi carpi
Tendon extensoris ulnaris carpi (*cut*)
A. radialis
Tendon extensoris digiti minimi (*cut*)
1
2
Tendines extensoris digitorum (*cut*)
3
6
5
4
Os 1 metacarpi
Retinaculum extensorium (Vaginae carpeae dorsales tendinum numbered)
Os 2 metacarpi
M. interosseus dorsalis 1
Os 5 metacarpi

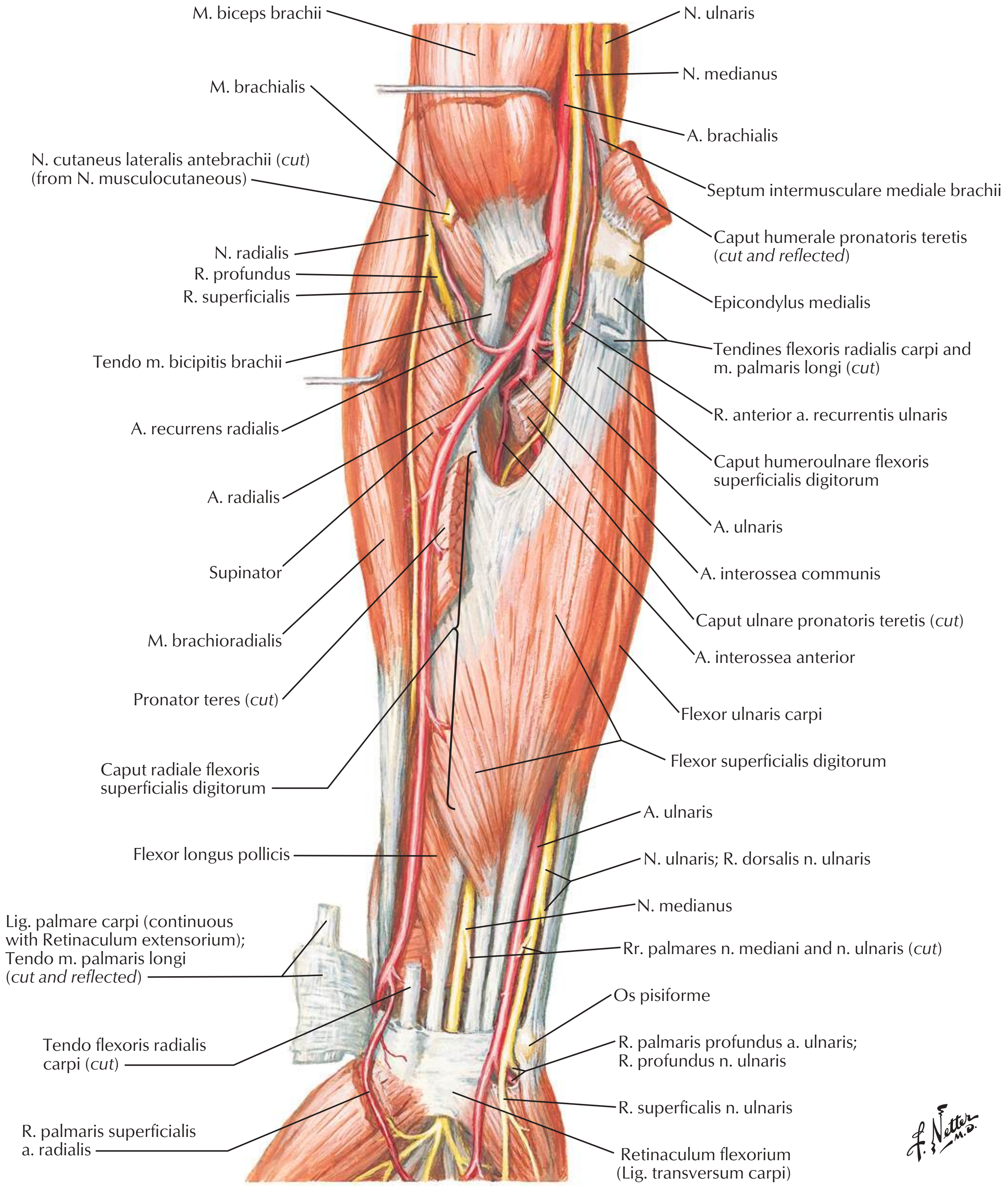
Muscles of Forearm (Superficial Layer): Anterior View

See also Plates 466, 467


A. brachialis; N. medianus
N. ulnaris
N. cutaneus lateralis antebrachii (from N. musculocutaneus)
A. ulnaris
Epicondylus medialis
M. brachialis
Tendo flexorius communis
Tendo m. bicipitis brachii
Pronator teres
A. radialis
Aponeurosis m. bicipitis brachii
Flexor radialis carpi
M. brachioradialis
M. palmaris longus
Flexores superficiales antebrachii
Flexor ulnaris carpi
Flexor superficialis digitorum
Tendo m. palmaris longi
A. radialis
N. medianus
A. and N. ulnaris
Tendines flexoris superficialis digitorum
Lig. palmare carpi (continuous with Retinaculum extensorium)
Os pisiforme
R. palmaris n. mediani
Aponeurosis palmaris
F. Netter M.D.

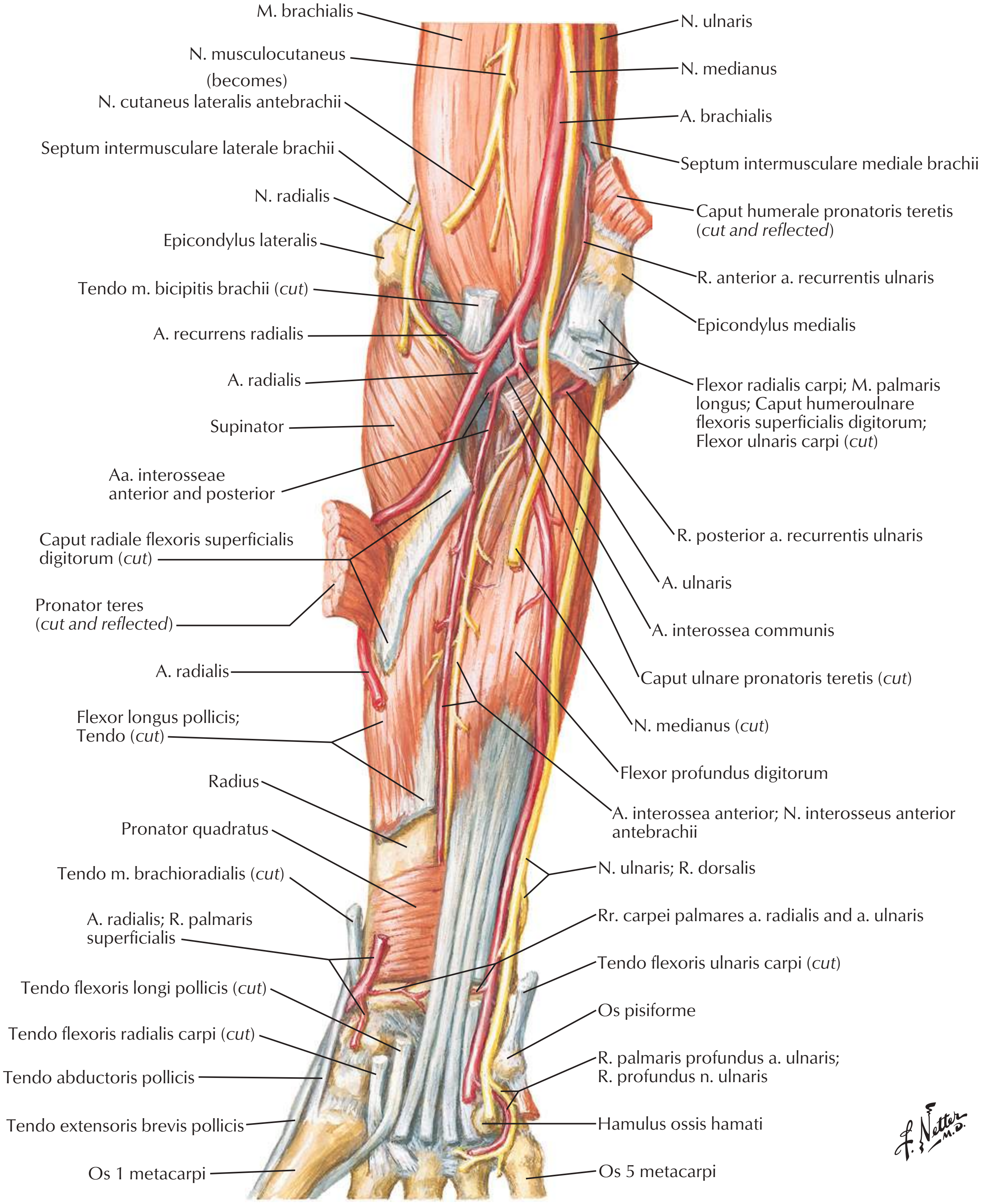
Muscles of Forearm (Intermediate Layer): Anterior View

See also Plates 424, 466

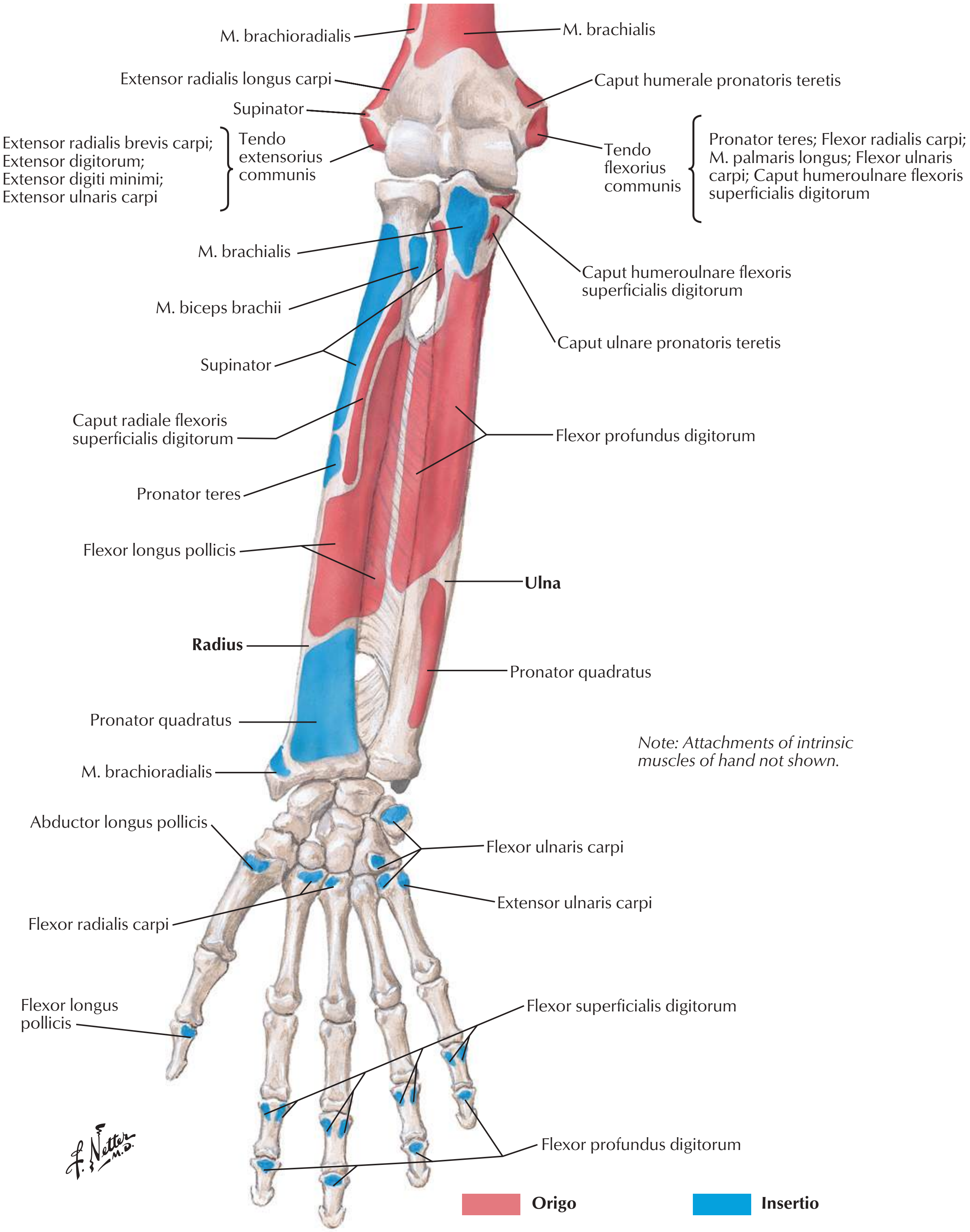

M. biceps brachii
M. brachialis
N. cutaneus lateralis antebrachii (*cut*) (from N. musculocutaneous)
N. radialis
R. profundus
R. superficialis
Tendo m. bicipitis brachii
A. recurrens radialis
A. radialis
Supinator
M. brachioradialis
Pronator teres (*cut*)
Caput radiale flexoris superficialis digitorum
Flexor longus pollicis
Lig. palmare carpi (continuous with Retinaculum extensorium); Tendo m. palmaris longi (*cut and reflected*)
Tendo flexoris radialis carpi (*cut*)
R. palmaris superficialis a. radialis
N. ulnaris
N. medianus
A. brachialis
Septum intermusculare mediale brachii
Caput humerale pronatoris teretis (*cut and reflected*)
Epicondylus medialis
Tendines flexoris radialis carpi and m. palmaris longi (*cut*)
R. anterior a. recurrentis ulnaris
Caput humeroulnare flexoris superficialis digitorum
A. ulnaris
A. interossea communis
Caput ulnare pronatoris teretis (*cut*)
A. interossea anterior
Flexor ulnaris carpi
Flexor superficialis digitorum
A. ulnaris
N. ulnaris; R. dorsalis n. ulnaris
N. medianus
Rr. palmares n. mediani and n. ulnaris (*cut*)
Os pisiforme
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
R. superficalis n. ulnaris
Retinaculum flexorium (Lig. transversum carpi)

Muscles of Forearm (Deep Layer): Anterior View

See also Plates 421, 467


M. brachialis
N. musculocutaneus
(becomes)
N. cutaneus lateralis antebrachii
Septum intermusculare laterale brachii
N. radialis
Epicondylus lateralis
Tendo m. bicipitis brachii (*cut*)
A. recurrens radialis
A. radialis
Supinator
Aa. interosseae anterior and posterior
Caput radiale flexoris superficialis digitorum (*cut*)
Pronator teres (*cut and reflected*)
A. radialis
Flexor longus pollicis; Tendo (*cut*)
Radius
Pronator quadratus
Tendo m. brachioradialis (*cut*)
A. radialis; R. palmaris superficialis
Tendo flexoris longi pollicis (*cut*)
Tendo flexoris radialis carpi (*cut*)
Tendo abductoris pollicis
Tendo extensoris brevis pollicis
Os 1 metacarpi
N. ulnaris
N. medianus
A. brachialis
Septum intermusculare mediale brachii
Caput humerale pronatoris teretis (*cut and reflected*)
R. anterior a. recurrentis ulnaris
Epicondylus medialis
Flexor radialis carpi; M. palmaris longus; Caput humeroulnare flexoris superficialis digitorum; Flexor ulnaris carpi (*cut*)
R. posterior a. recurrentis ulnaris
A. ulnaris
A. interossea communis
Caput ulnare pronatoris teretis (*cut*)
N. medianus (*cut*)
Flexor profundus digitorum
A. interossea anterior; N. interosseus anterior antebrachii
N. ulnaris; R. dorsalis
Rr. carpei palmares a. radialis and a. ulnaris
Tendo flexoris ulnaris carpi (*cut*)
Os pisiforme
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
Hamulus ossis hamati
Os 5 metacarpi
F. Netter M.D.

Attachments of Muscles of Forearm: Anterior View

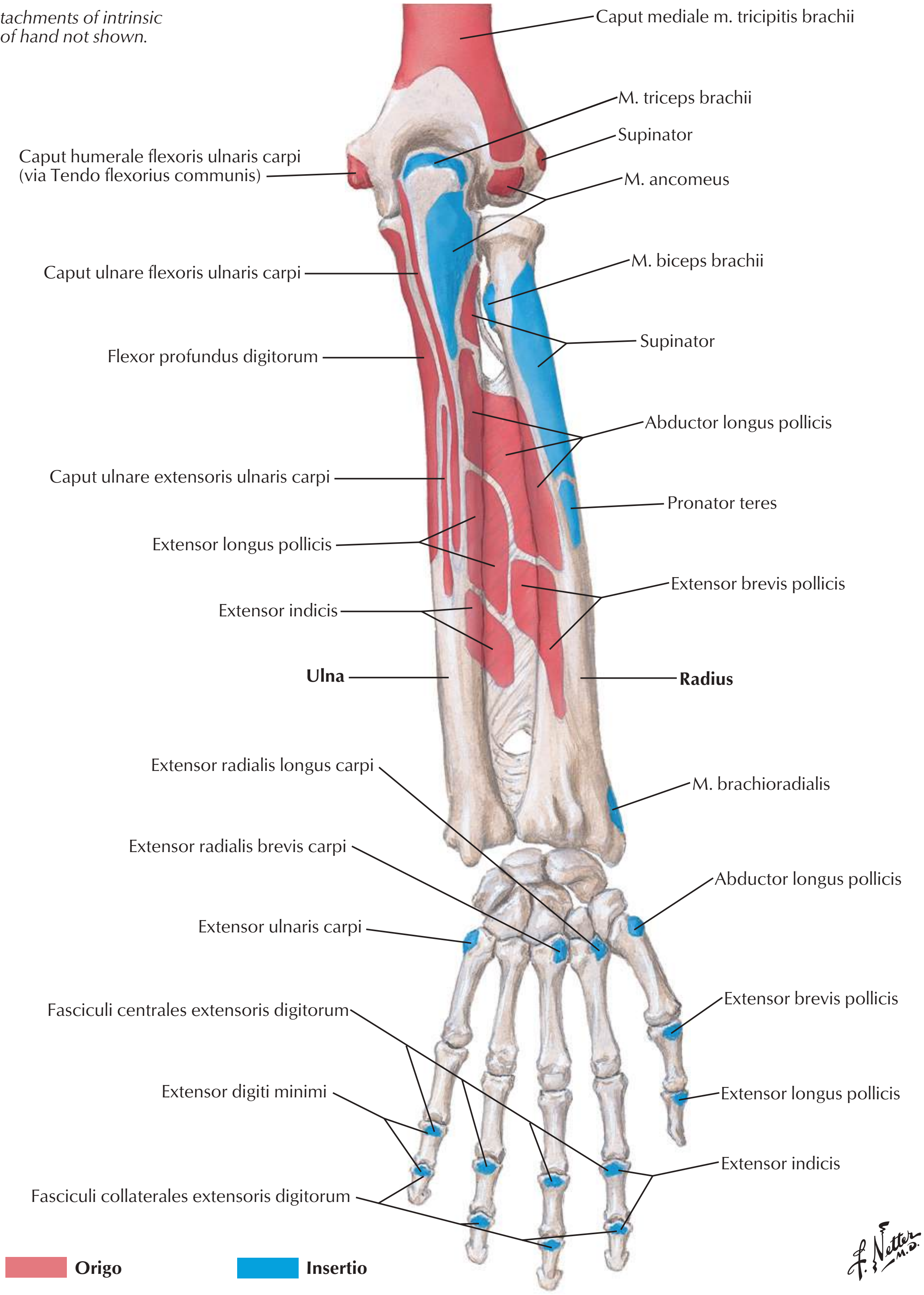

M. brachioradialis
M. brachialis
Extensor radialis longus carpi
Caput humerale pronatoris teretis
Supinator
Extensor radialis brevis carpi;
Extensor digitorum;
Extensor digiti minimi;
Extensor ulnaris carpi
Tendo extensorius communis
Tendo flexorius communis
Pronator teres; Flexor radialis carpi; M. palmaris longus; Flexor ulnaris carpi; Caput humeroulnare flexoris superficialis digitorum
M. brachialis
Caput humeroulnare flexoris superficialis digitorum
M. biceps brachii
Caput ulnare pronatoris teretis
Supinator
Caput radiale flexoris superficialis digitorum
Flexor profundus digitorum
Pronator teres
Flexor longus pollicis
Ulna
Radius
Pronator quadratus
Pronator quadratus
M. brachioradialis
Abductor longus pollicis
Flexor ulnaris carpi
Extensor ulnaris carpi
Flexor radialis carpi
Flexor longus pollicis
Flexor superficialis digitorum
Flexor profundus digitorum
🟥 Origo
🟦 Insertio

Note: Attachments of intrinsic muscles of hand not shown.

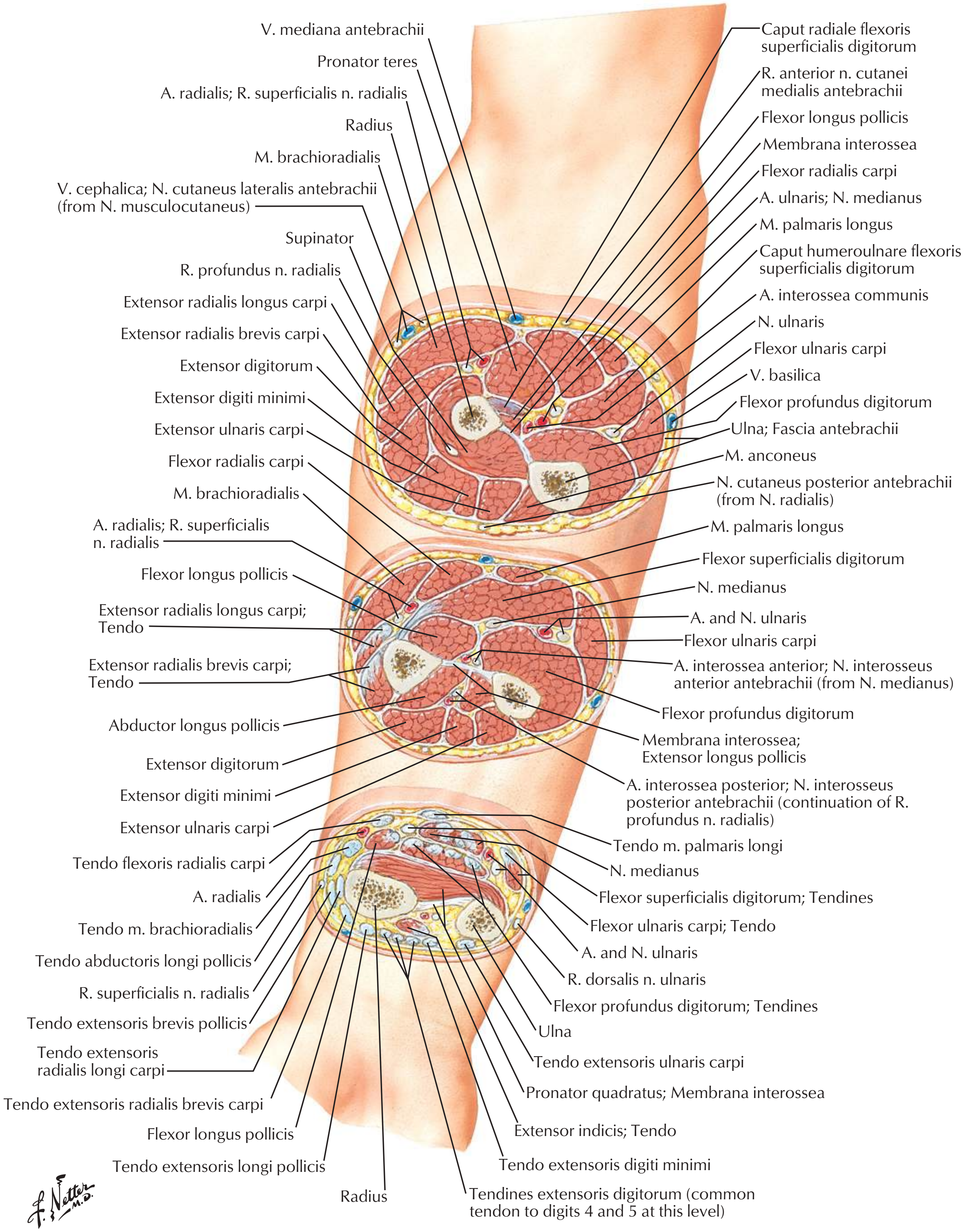
Attachments of Muscles of Forearm: Posterior View

See also Plate 431

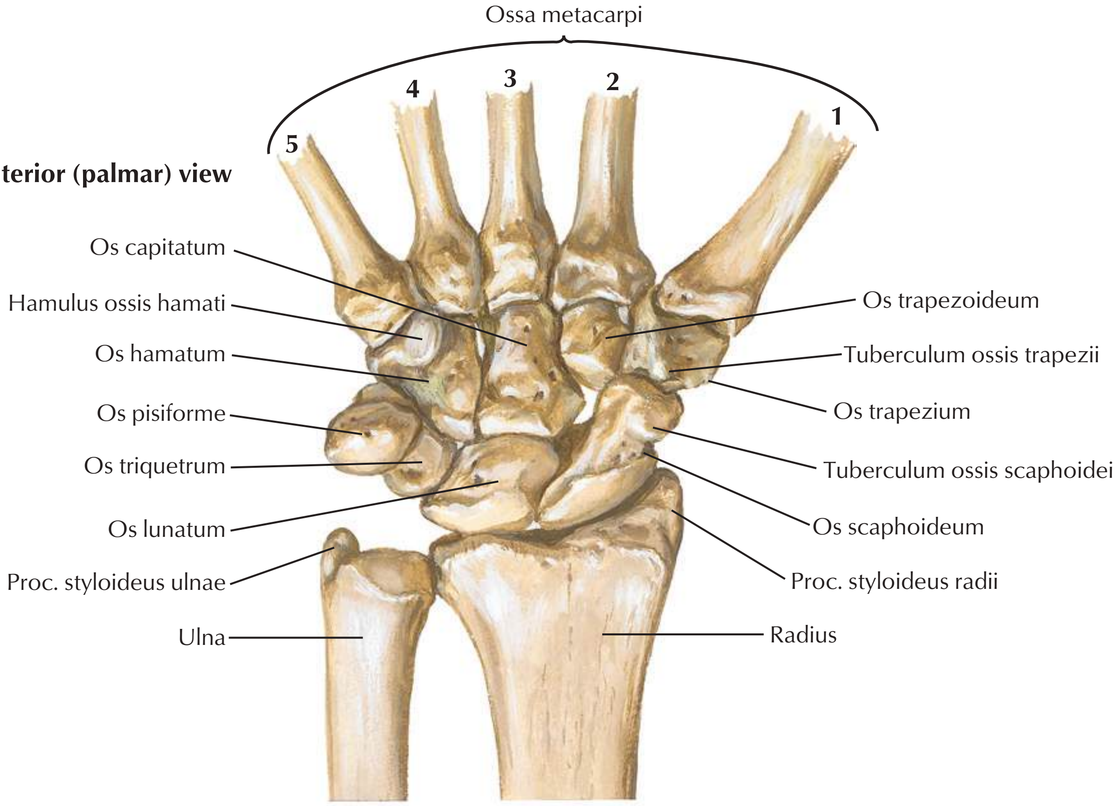
Note: Attachments of intrinsic muscles of hand not shown.


Caput mediale m. tricipitis brachii
M. triceps brachii
Supinator
Caput humerale flexoris ulnaris carpi (via Tendo flexorius communis)
M. ancomeus
Caput ulnare flexoris ulnaris carpi
M. biceps brachii
Supinator
Flexor profundus digitorum
Abductor longus pollicis
Caput ulnare extensoris ulnaris carpi
Pronator teres
Extensor longus pollicis
Extensor brevis pollicis
Extensor indicis
Ulna
Radius
Extensor radialis longus carpi
M. brachioradialis
Extensor radialis brevis carpi
Abductor longus pollicis
Extensor ulnaris carpi
Fasciculi centrales extensoris digitorum
Extensor brevis pollicis
Extensor digiti minimi
Extensor longus pollicis
Extensor indicis
Fasciculi collaterales extensoris digitorum
Origo
Insertio
F. Netter M.D.

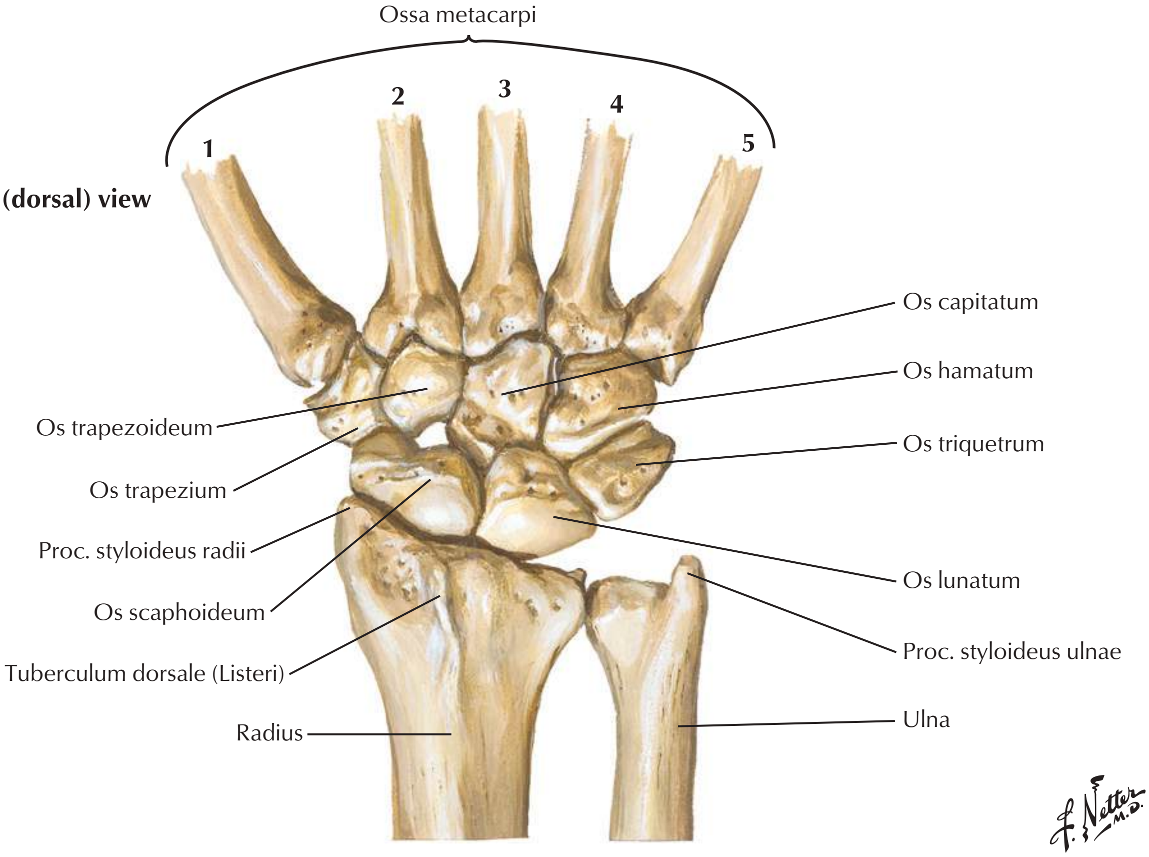
Forearm: Serial Cross Sections, Anterior View


V. mediana antebrachii
Pronator teres
A. radialis; R. superficialis n. radialis
Radius
M. brachioradialis
V. cephalica; N. cutaneus lateralis antebrachii (from N. musculocutaneus)
Supinator
R. profundus n. radialis
Extensor radialis longus carpi
Extensor radialis brevis carpi
Extensor digitorum
Extensor digiti minimi
Extensor ulnaris carpi
Flexor radialis carpi
M. brachioradialis
A. radialis; R. superficialis n. radialis
Flexor longus pollicis
Extensor radialis longus carpi; Tendo
Extensor radialis brevis carpi; Tendo
Abductor longus pollicis
Extensor digitorum
Extensor digiti minimi
Extensor ulnaris carpi
Tendo flexoris radialis carpi
A. radialis
Tendo m. brachioradialis
Tendo abductoris longi pollicis
R. superficialis n. radialis
Tendo extensoris brevis pollicis
Tendo extensoris radialis longi carpi
Tendo extensoris radialis brevis carpi
Flexor longus pollicis
Tendo extensoris longi pollicis
Radius
Caput radiale flexoris superficialis digitorum
R. anterior n. cutanei medialis antebrachii
Flexor longus pollicis
Membrana interossea
Flexor radialis carpi
A. ulnaris; N. medianus
M. palmaris longus
Caput humeroulnare flexoris superficialis digitorum
A. interossea communis
N. ulnaris
Flexor ulnaris carpi
V. basilica
Flexor profundus digitorum
Ulna; Fascia antebrachii
M. anconeus
N. cutaneus posterior antebrachii (from N. radialis)
M. palmaris longus
Flexor superficialis digitorum
N. medianus
A. and N. ulnaris
Flexor ulnaris carpi
A. interossea anterior; N. interosseus anterior antebrachii (from N. medianus)
Flexor profundus digitorum
Membrana interossea; Extensor longus pollicis
A. interossea posterior; N. interosseus posterior antebrachii (continuation of R. profundus n. radialis)
Tendo m. palmaris longi
N. medianus
Flexor superficialis digitorum; Tendines
Flexor ulnaris carpi; Tendo
A. and N. ulnaris
R. dorsalis n. ulnaris
Flexor profundus digitorum; Tendines
Ulna
Tendo extensoris ulnaris carpi
Pronator quadratus; Membrana interossea
Extensor indicis; Tendo
Tendo extensoris digiti minimi
Tendines extensoris digitorum (common tendon to digits 4 and 5 at this level)

Anterior (palmar) view

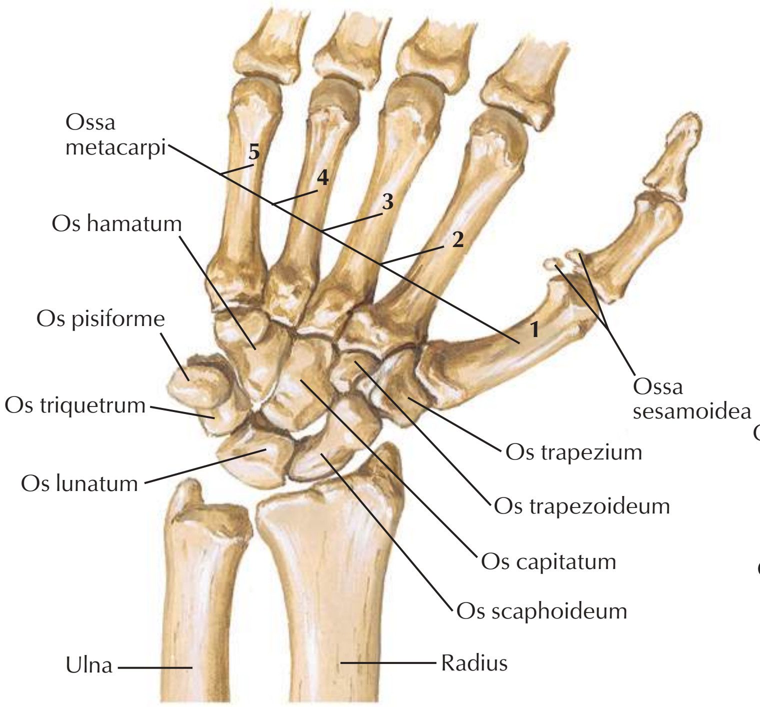

Ossa metacarpi
5
4
3
2
1
Os capitatum
Hamulus ossis hamati
Os hamatum
Os pisiforme
Os triquetrum
Os lunatum
Proc. styloideus ulnae
Ulna
Os trapezoideum
Tuberculum ossis trapezii
Os trapezium
Tuberculum ossis scaphoidei
Os scaphoideum
Proc. styloideus radii
Radius

Posterior (dorsal) view

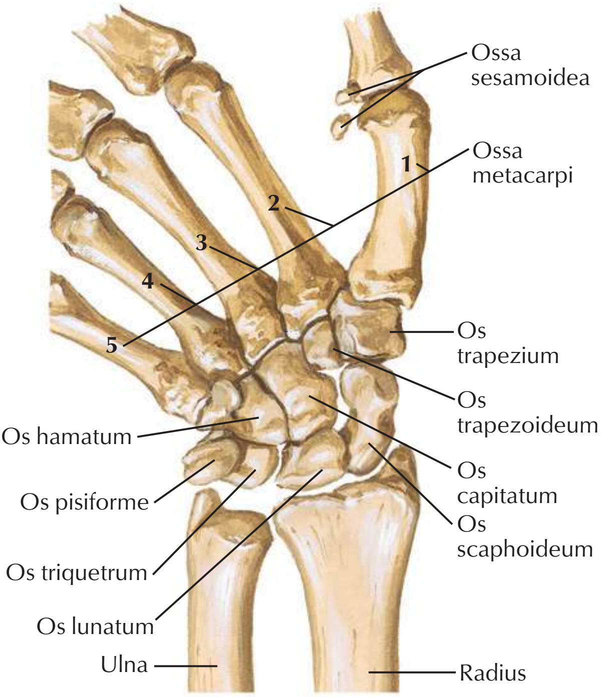

Ossa metacarpi
1
2
3
4
5
Os trapezoideum
Os trapezium
Proc. styloideus radii
Os scaphoideum
Tuberculum dorsale (Listeri)
Radius
Os capitatum
Os hamatum
Os triquetrum
Os lunatum
Proc. styloideus ulnae
Ulna

Movements of Wrist

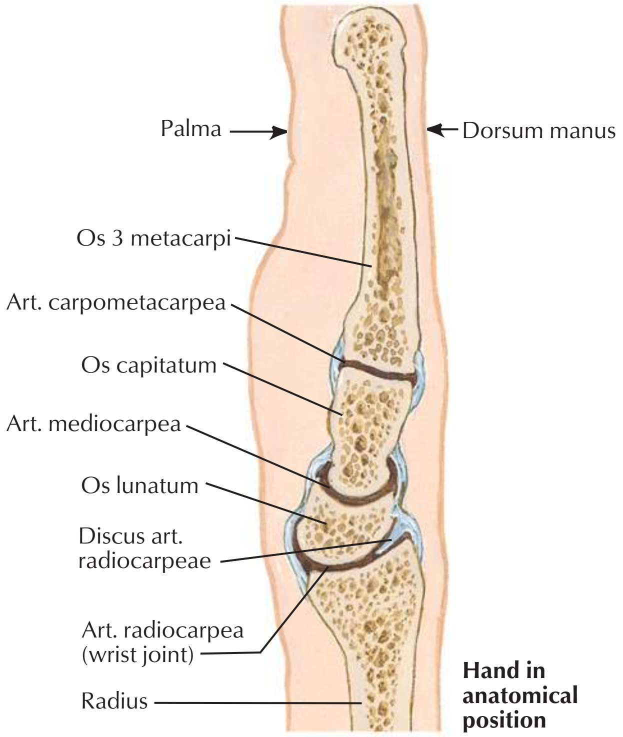
See also Plates 446, 447


Ossa metacarpi
5
4
3
2
1
Os hamatum
Os pisiforme
Os triquetrum
Os lunatum
Ossa sesamoidea
Os trapezium
Os trapezoideum
Os capitatum
Os scaphoideum
Ulna
Radius

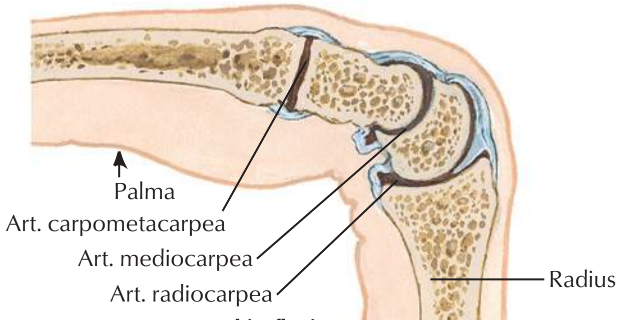
Position of carpal bones with hand in abduction: anterior (palmar) view


Ossa sesamoidea
Ossa metacarpi
1
2
3
4
5
Os trapezium
Os trapezoideum
Os hamatum
Os capitatum
Os scaphoideum
Os pisiforme
Os triquetrum
Os lunatum
Ulna
Radius

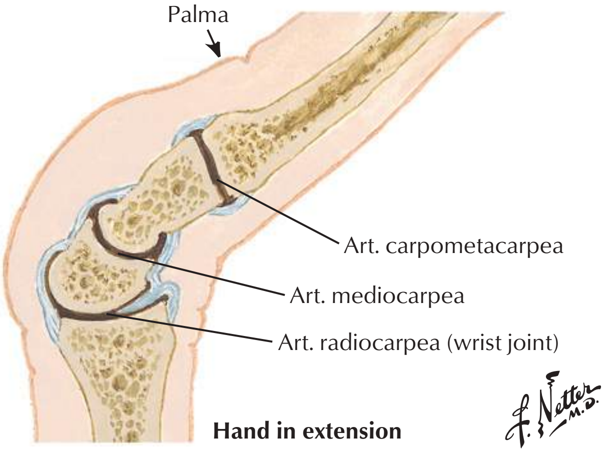
Position of carpal bones with hand in adduction: anterior (palmar) view


Palma
Dorsum manus
Os 3 metacarpi
Art. carpometacarpea
Os capitatum
Art. mediocarpea
Os lunatum
Discus art. radiocarpeae
Art. radiocarpea (wrist joint)
Radius

Hand in anatomical position


Palma
Art. carpometacarpea
Art. mediocarpea
Art. radiocarpea
Radius

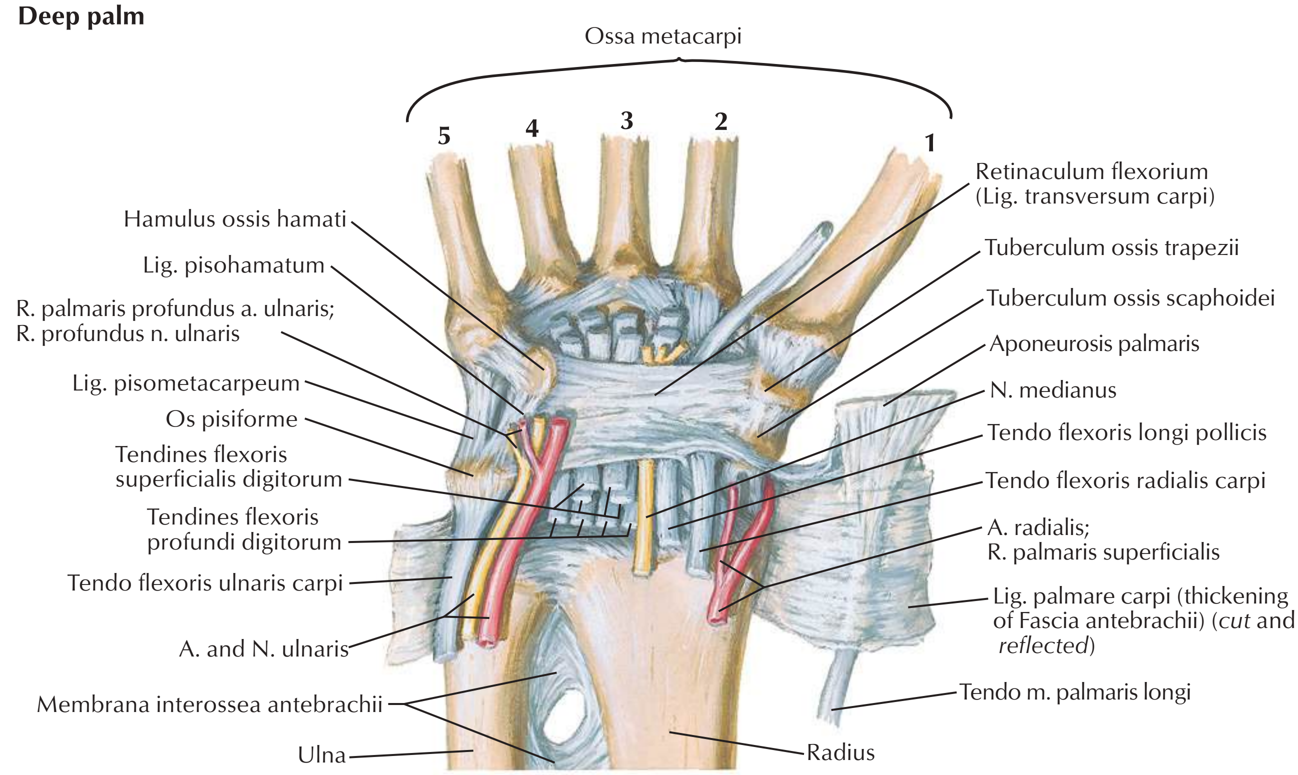
Hand in flexion


Palma
Art. carpometacarpea
Art. mediocarpea
Art. radiocarpea (wrist joint)

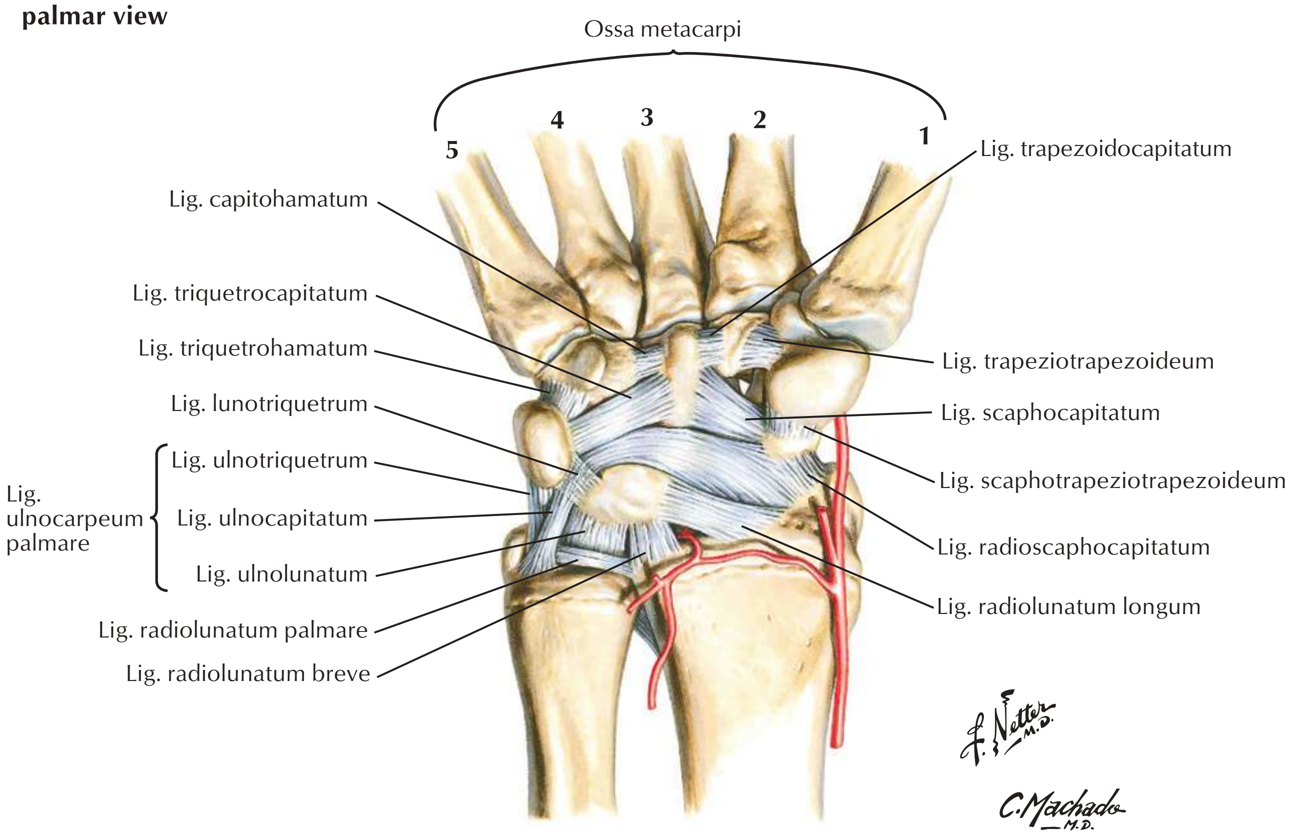
Hand in extension

Sagittal sections through wrist and middle finger

Deep palm


Ossa metacarpi
5
4
3
2
1
Hamulus ossis hamati
Lig. pisohamatum
R. palmaris profundus a. ulnaris;
R. profundus n. ulnaris
Lig. pisometacarpeum
Os pisiforme
Tendines flexoris superficialis digitorum
Tendines flexoris profundi digitorum
Tendo flexoris ulnaris carpi
A. and N. ulnaris
Membrana interossea antebrachii
Ulna
Retinaculum flexorium (Lig. transversum carpi)
Tuberculum ossis trapezii
Tuberculum ossis scaphoidei
Aponeurosis palmaris
N. medianus
Tendo flexoris longi pollicis
Tendo flexoris radialis carpi
A. radialis;
R. palmaris superficialis
Lig. palmare carpi (thickening of Fascia antebrachii) (cut and reflected)
Tendo m. palmaris longi
Radius

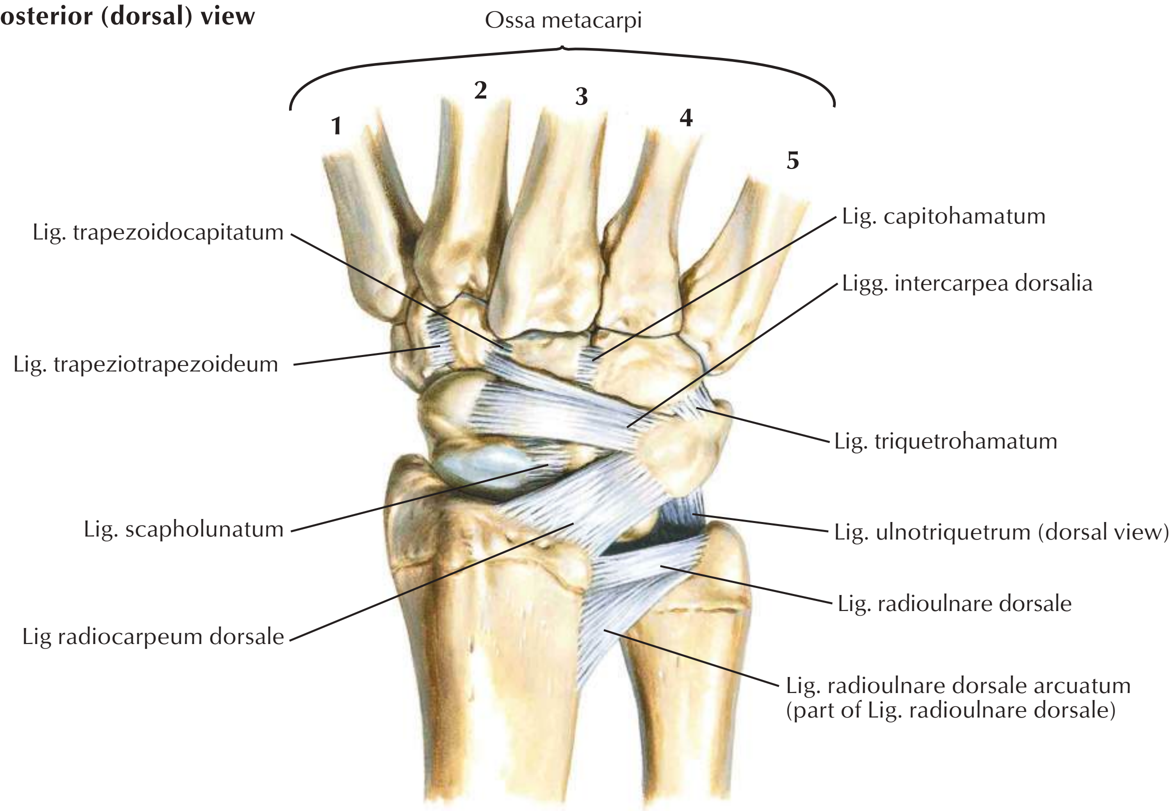
Retinaculum flexorium removed: palmar view


Ossa metacarpi
5
4
3
2
1
Lig. capitohamatum
Lig. triquetrocapitatum
Lig. triquetrohamatum
Lig. lunotriquetrum
Lig. ulnocarpeum palmare
Lig. ulnotriquetrum
Lig. ulnocapitatum
Lig. ulnolunatum
Lig. radiolunatum palmare
Lig. radiolunatum breve
Lig. trapezoidocapitatum
Lig. trapeziotrapezoideum
Lig. scaphocapitatum
Lig. scaphotrapeziotrapezoideum
Lig. radioscaphocapitatum
Lig. radiolunatum longum
F. Netter M.D.
C. Machado M.D.

Ligaments of Wrist (Continued)

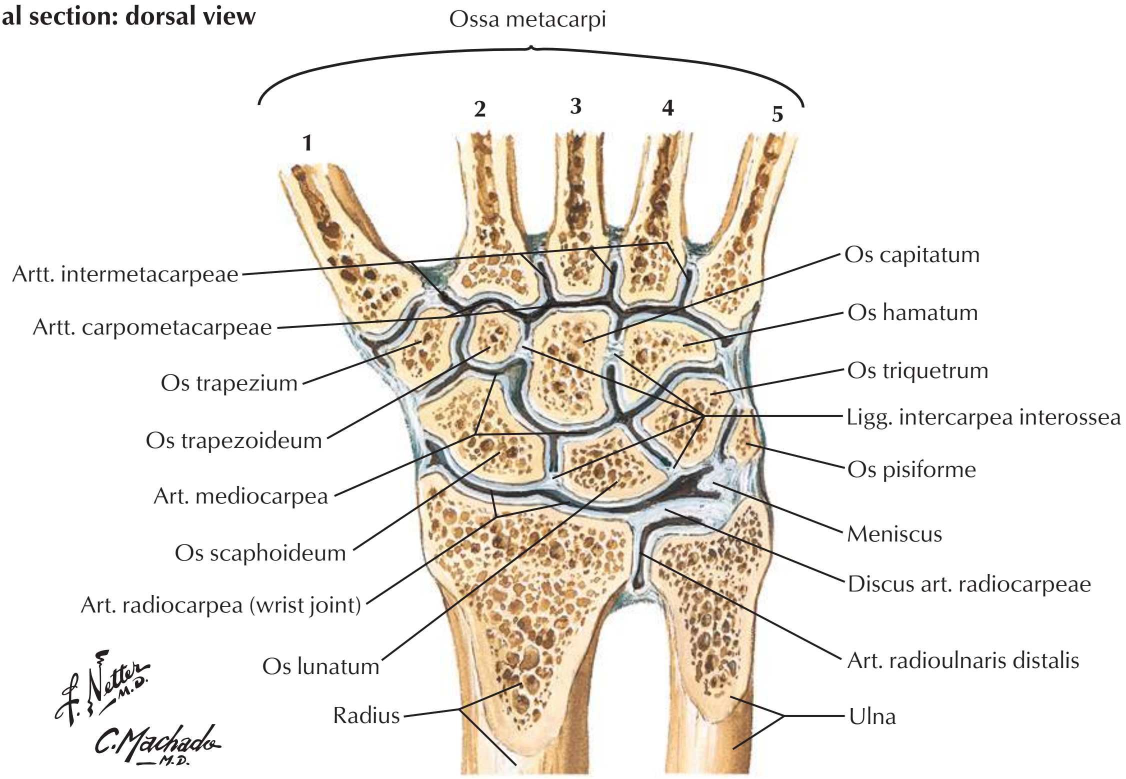
See also Plate 447

Posterior (dorsal) view



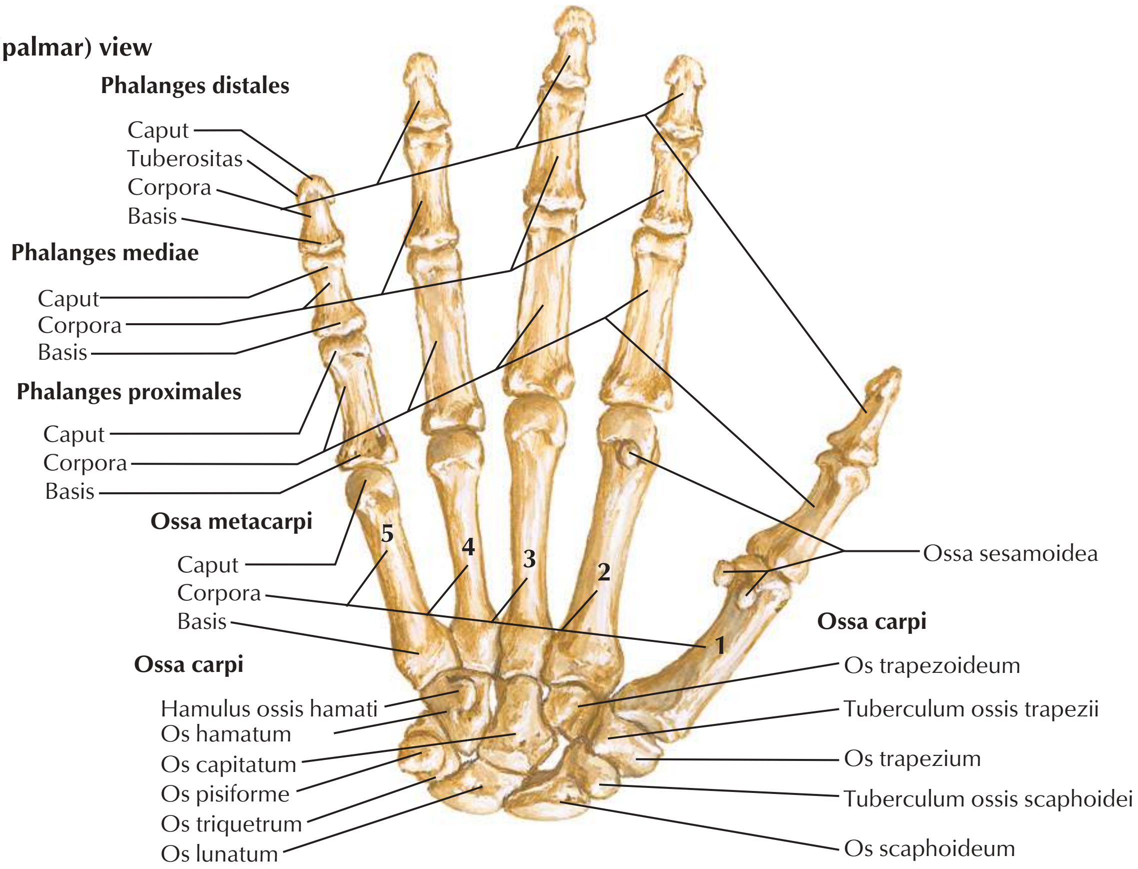
Ossa metacarpi
1
2
3
4
5
Lig. trapezoidocapitatum
Lig. trapeziotrapezoideum
Lig. scapholunatum
Lig radiocarpeum dorsale
Lig. capitohamatum
Ligg. intercarpea dorsalia
Lig. triquetrohamatum
Lig. ulnotriquetrum (dorsal view)
Lig. radioulnare dorsale
Lig. radioulnare dorsale arcuatum
(part of Lig. radioulnare dorsale)

Coronal section: dorsal view

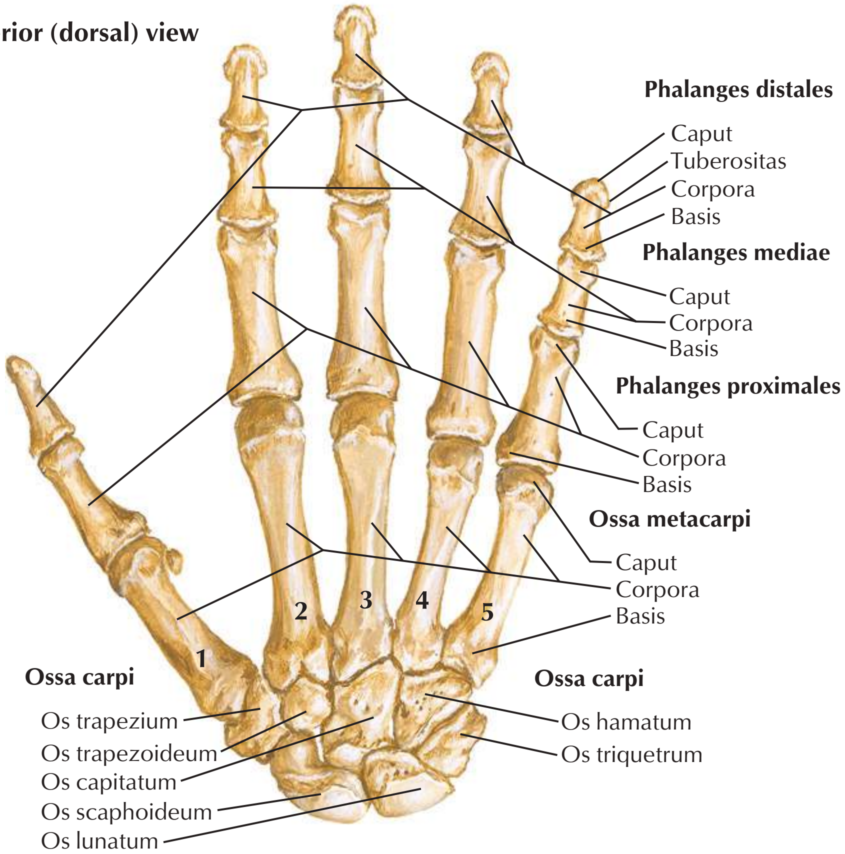


Ossa metacarpi
1
2
3
4
5
Artt. intermetacarpeae
Artt. carpometacarpeae
Os trapezium
Os trapezoideum
Art. mediocarpea
Os scaphoideum
Art. radiocarpea (wrist joint)
Os lunatum
Radius
Os capitatum
Os hamatum
Os triquetrum
Ligg. intercarpea interossea
Os pisiforme
Meniscus
Discus art. radiocarpeae
Art. radioulnaris distalis
Ulna
F. Netter M.D.
C. Machado M.D.

Right hand: anterior (palmar) view


Phalanges distales
Caput
Tuberositas
Corpora
Basis
Phalanges mediae
Caput
Corpora
Basis
Phalanges proximales
Caput
Corpora
Basis
Ossa metacarpi
Caput
Corpora
Basis
5
4
3
2
1
Ossa sesamoidea
Ossa carpi
Hamulus ossis hamati
Os hamatum
Os capitatum
Os pisiforme
Os triquetrum
Os lunatum
Ossa carpi
Os trapezoideum
Tuberculum ossis trapezii
Os trapezium
Tuberculum ossis scaphoidei
Os scaphoideum

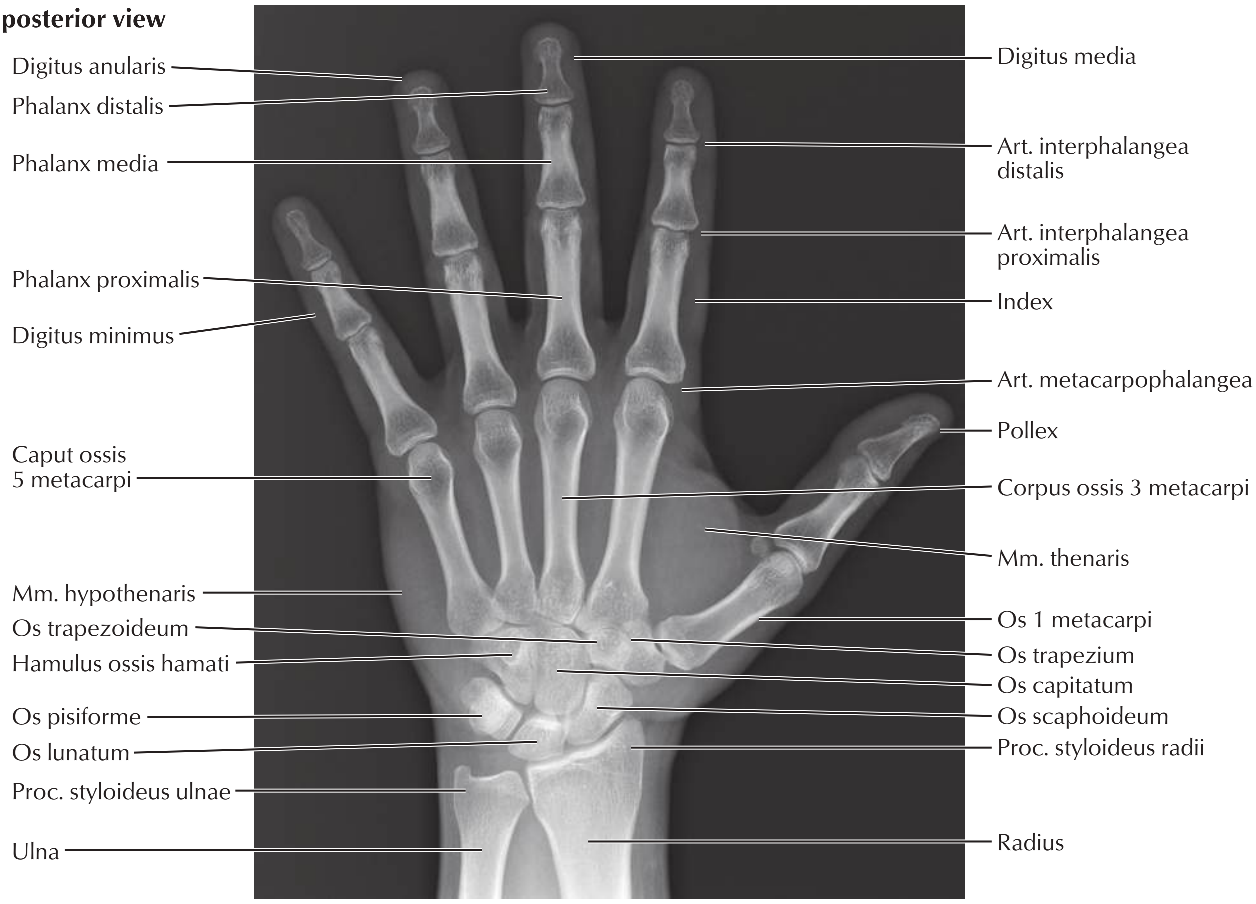
Right hand: posterior (dorsal) view


Phalanges distales
Caput
Tuberositas
Corpora
Basis
Phalanges mediae
Caput
Corpora
Basis
Phalanges proximales
Caput
Corpora
Basis
Ossa metacarpi
Caput
Corpora
Basis
1
2
3
4
5
Ossa carpi
Os trapezium
Os trapezoideum
Os capitatum
Os scaphoideum
Os lunatum
Ossa carpi
Os hamatum
Os triquetrum

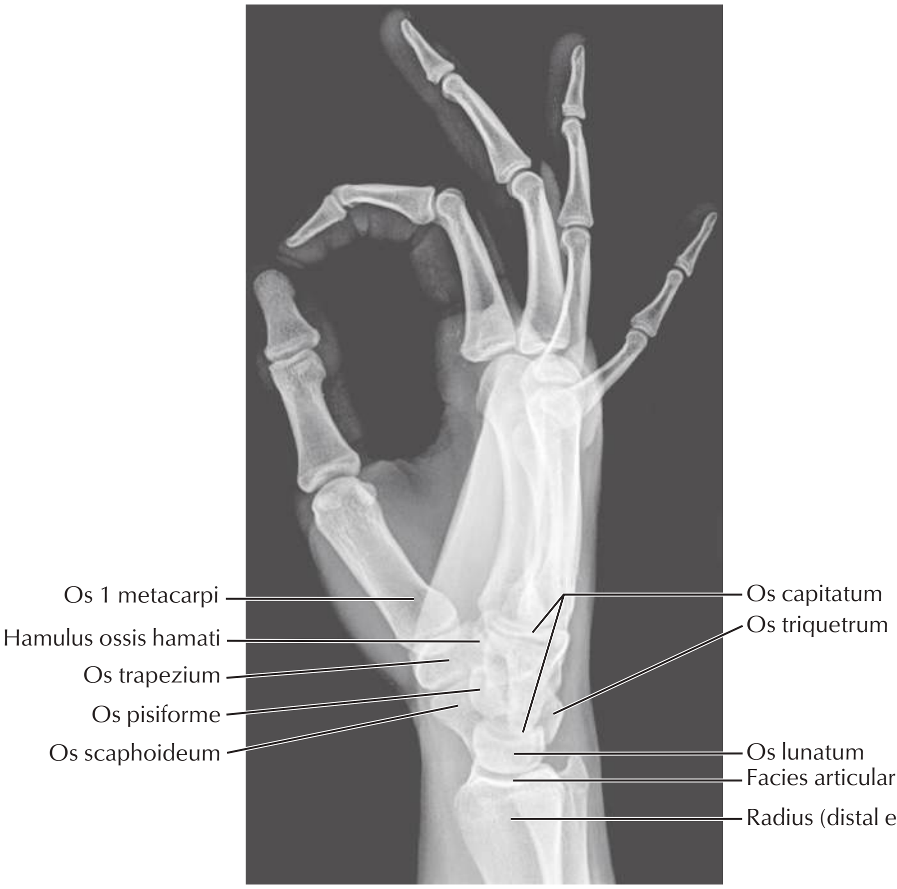
F. Netter M.D.

See also **Plate 446**

Anteroposterior view


Digitus anularis
Phalanx distalis
Phalanx media
Phalanx proximalis
Digitus minimus
Caput ossis 5 metacarpi
Mm. hypothenaris
Os trapezoideum
Hamulus ossis hamati
Os pisiforme
Os lunatum
Proc. styloideus ulnae
Ulna
Digitus media
Art. interphalangea distalis
Art. interphalangea proximalis
Index
Art. metacarpophalangea
Pollex
Corpus ossis 3 metacarpi
Mm. thenaris
Os 1 metacarpi
Os trapezium
Os capitatum
Os scaphoideum
Proc. styloideus radii
Radius

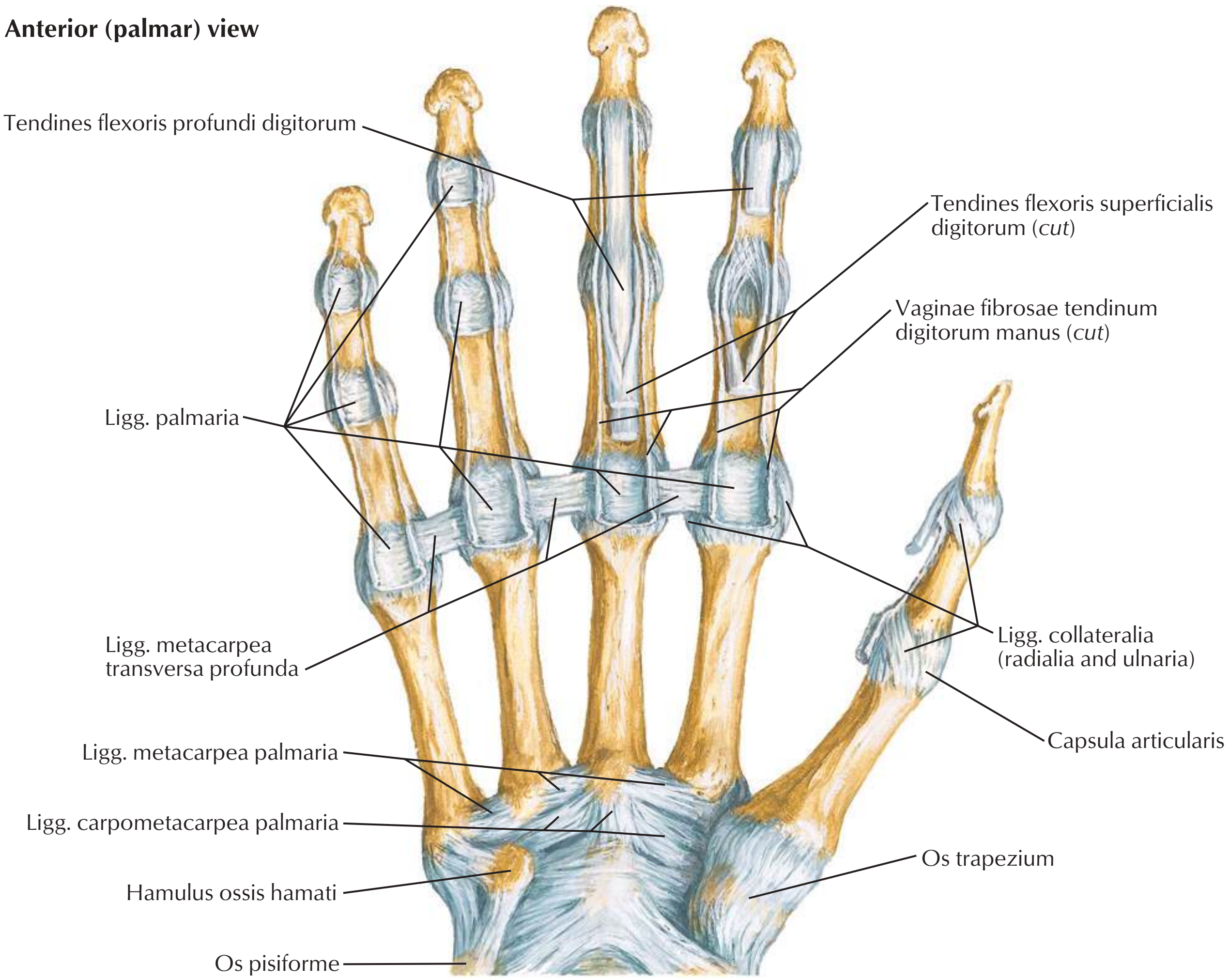
Lateral view


Os 1 metacarpi
Hamulus ossis hamati
Os trapezium
Os pisiforme
Os scaphoideum
Os capitatum
Os triquetrum
Os lunatum
Facies articularis radii
Radius (distal end)

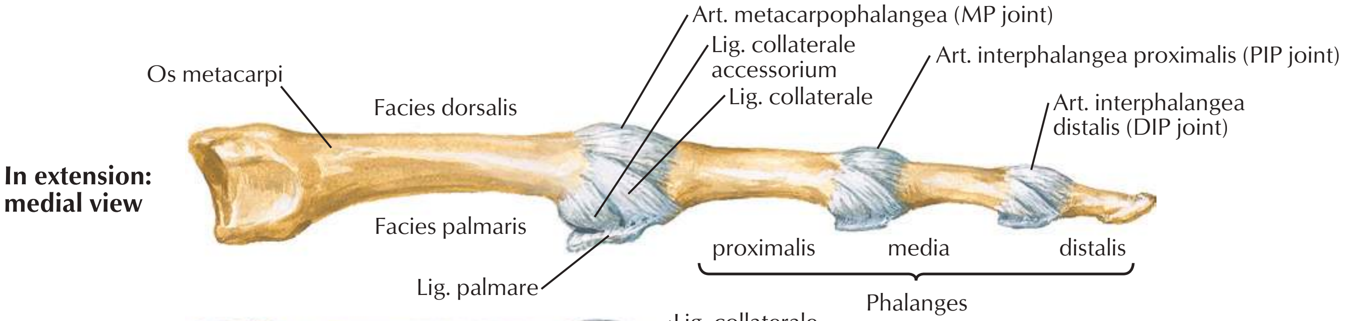
Metacarpophalangeal and Interphalangeal Ligaments

See also Plate 451

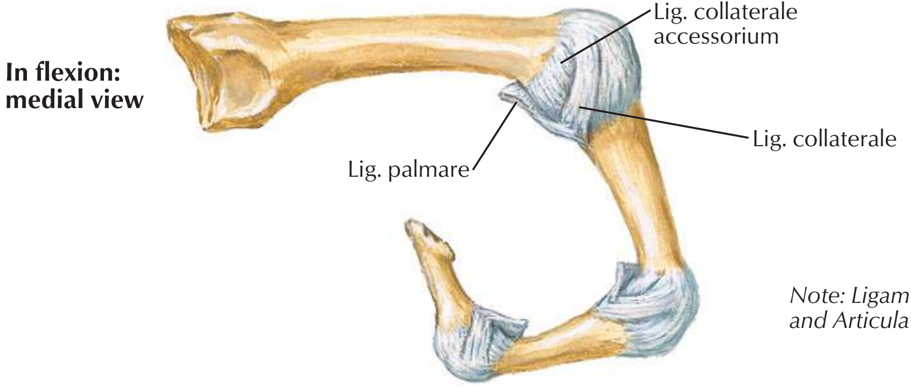
Anterior (palmar) view


Tendines flexoris profundi digitorum
Tendines flexoris superficialis digitorum (*cut*)
Vaginae fibrosae tendinum digitorum manus (*cut*)
Ligg. palmaria
Ligg. metacarpea transversa profunda
Ligg. collateralia (radialia and ulnaria)
Capsula articularis
Ligg. metacarpea palmaria
Ligg. carpometacarpea palmaria
Hamulus ossis hamati
Os trapezium
Os pisiforme

In extension: medial view


Art. metacarpophalangea (MP joint)
Lig. collaterale accessorium
Lig. collaterale
Art. interphalangea proximalis (PIP joint)
Art. interphalangea distalis (DIP joint)
Os metacarpi
Facies dorsalis
Facies palmaris
Lig. palmare
proximalis
media
distalis
Phalanges

In flexion: medial view

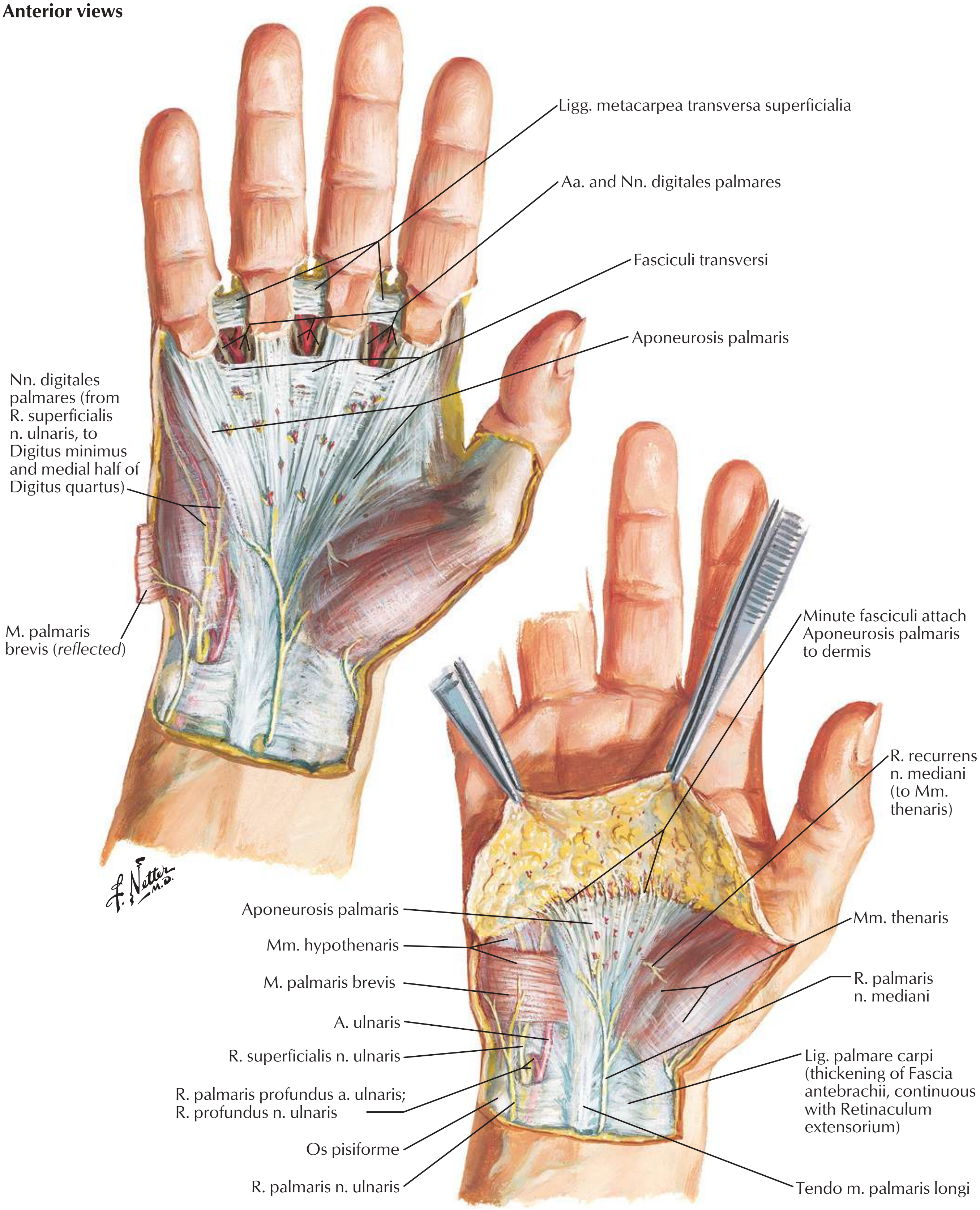

Lig. collaterale accessorium
Lig. palmare
Lig. collaterale

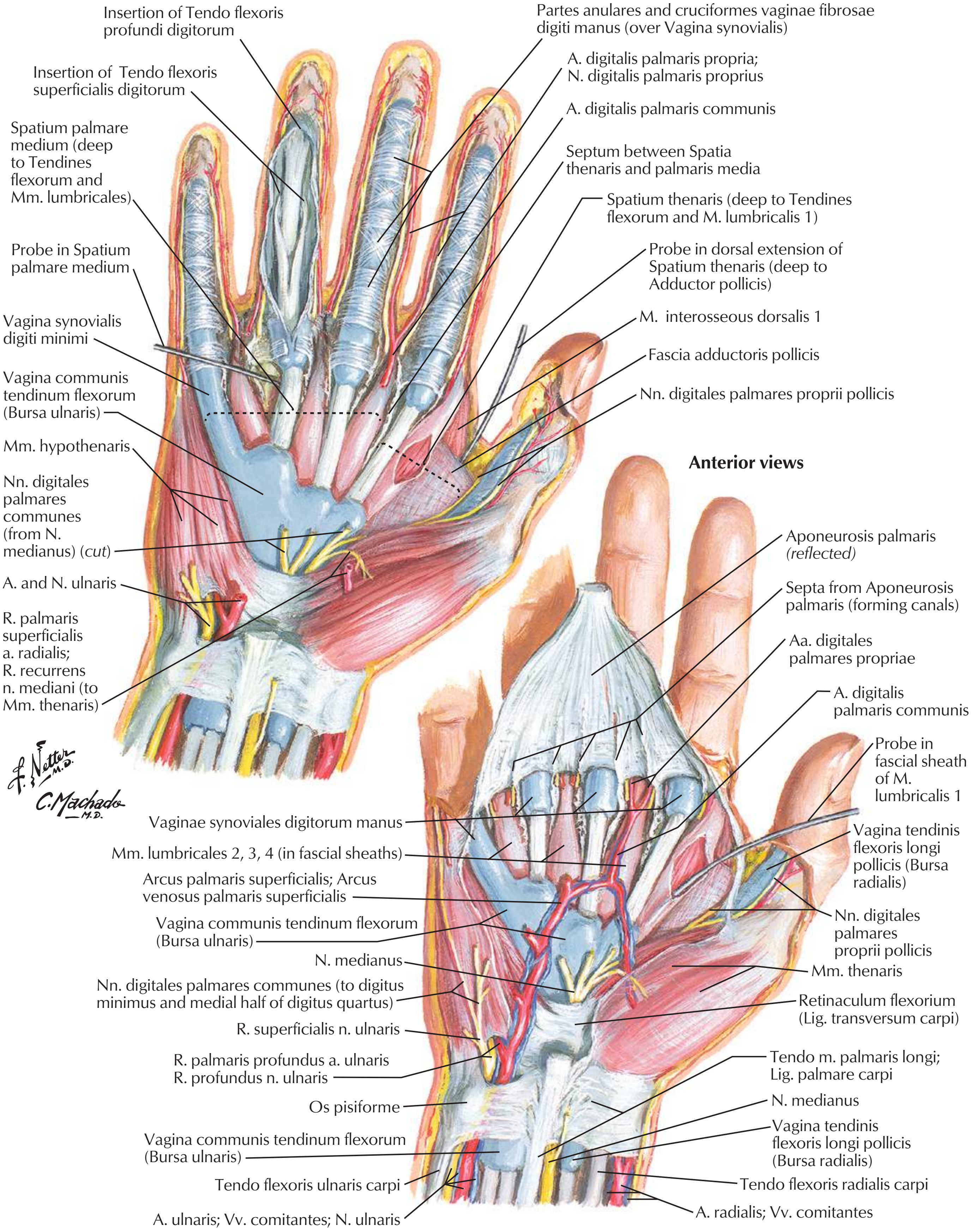
Note: Ligaments of Articulatio metacarpophalangea and Articulatio interphalangea are similar.

Wrist and Hand: Superficial Palmar Dissections

See also Plate 462

Anterior views

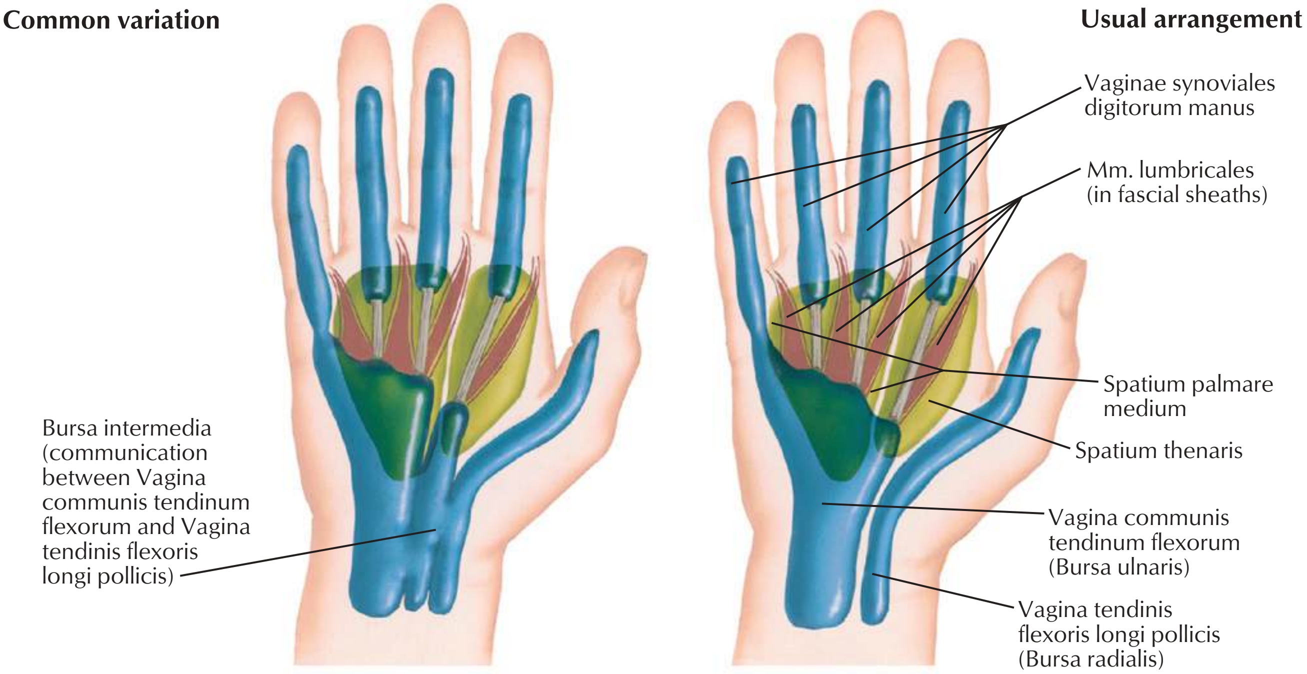

Ligg. metacarpea transversa superficialia
Aa. and Nn. digitales palmares
Fasciculi transversi
Aponeurosis palmaris
Nn. digitales palmares (from R. superficialis n. ulnaris, to Digitus minimus and medial half of Digitus quartus)
M. palmaris brevis (*reflected*)
Minute fasciculi attach Aponeurosis palmaris to dermis
R. recurrens n. mediani (to Mm. thenaris)
Aponeurosis palmaris
Mm. hypothenaris
M. palmaris brevis
A. ulnaris
R. superficialis n. ulnaris
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
Os pisiforme
R. palmaris n. ulnaris
Mm. thenaris
R. palmaris n. mediani
Lig. palmare carpi (thickening of Fascia antebrachii, continuous with Retinaculum extensorium)
Tendo m. palmaris longi


Insertion of Tendo flexoris profundi digitorum
Insertion of Tendo flexoris superficialis digitorum
Spatium palmare medium (deep to Tendines flexorum and Mm. lumbricales)
Probe in Spatium palmare medium
Vagina synovialis digiti minimi
Vagina communis tendinum flexorum (Bursa ulnaris)
Mm. hypothenaris
Nn. digitales palmares communes (from N. medianus) (*cut*)
A. and N. ulnaris
R. palmaris superficialis a. radialis; R. recurrens n. mediani (to Mm. thenaris)
Partes anulares and cruciformes vaginae fibrosae digiti manus (over Vagina synovialis)
A. digitalis palmaris propria; N. digitalis palmaris proprius
A. digitalis palmaris communis
Septum between Spatia thenaris and palmaris media
Spatium thenaris (deep to Tendines flexorum and M. lumbricalis 1)
Probe in dorsal extension of Spatium thenaris (deep to Adductor pollicis)
M. interosseous dorsalis 1
Fascia adductoris pollicis
Nn. digitales palmares proprii pollicis
F. Netter M.D.
C. Machado M.D.
Aponeurosis palmaris (*reflected*)
Septa from Aponeurosis palmaris (forming canals)
Aa. digitales palmares propriae
A. digitalis palmaris communis
Probe in fascial sheath of M. lumbricalis 1
Vagina tendinis flexoris longi pollicis (Bursa radialis)
Nn. digitales palmares proprii pollicis
Mm. thenaris
Retinaculum flexorium (Lig. transversum carpi)
Tendo m. palmaris longi; Lig. palmare carpi
N. medianus
Vagina tendinis flexoris longi pollicis (Bursa radialis)
Tendo flexoris radialis carpi
A. radialis; Vv. comitantes
Vaginae synoviales digitorum manus
Mm. lumbricales 2, 3, 4 (in fascial sheaths)
Arcus palmaris superficialis; Arcus venosus palmaris superficialis
Vagina communis tendinum flexorum (Bursa ulnaris)
N. medianus
Nn. digitales palmares communes (to digitus minimus and medial half of digitus quartus)
R. superficialis n. ulnaris
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
Os pisiforme
Vagina communis tendinum flexorum (Bursa ulnaris)
Tendo flexoris ulnaris carpi
A. ulnaris; Vv. comitantes; N. ulnaris

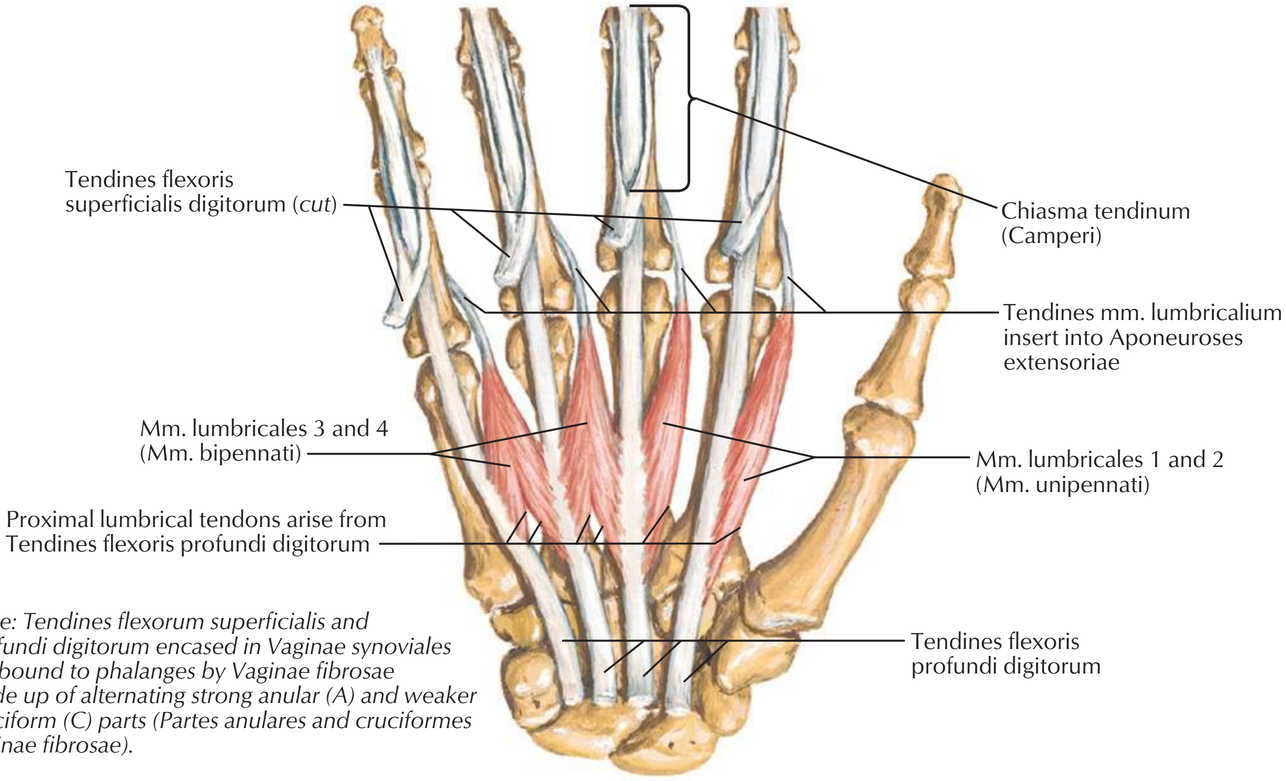
Anterior views

Lumbrical Muscles and Bursae, Spaces, and Sheaths: Schema

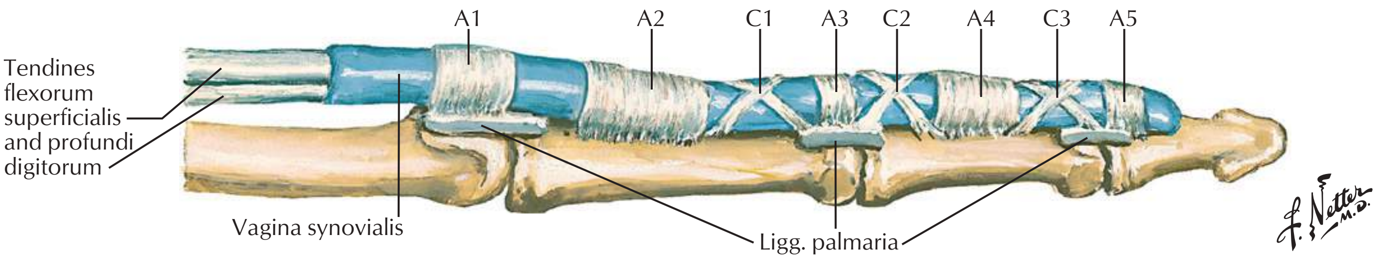
See also Plate 448


Common variation
Usual arrangement
Vaginae synoviales digitorum manus
Mm. lumbricales (in fascial sheaths)
Bursa intermedia (communication between Vagina communis tendinum flexorum and Vagina tendinis flexoris longi pollicis)
Spatium palmare medium
Spatium thenaris
Vagina communis tendinum flexorum (Bursa ulnaris)
Vagina tendinis flexoris longi pollicis (Bursa radialis)

Lumbrical muscles: schema

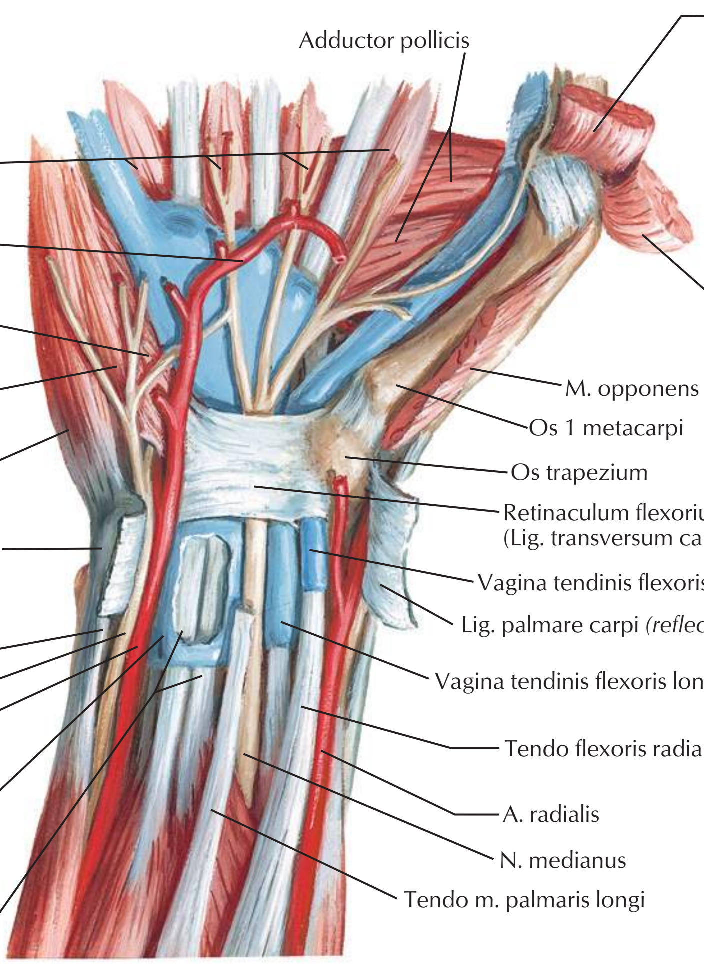

Tendines flexoris superficialis digitorum (*cut*)
Chiasma tendinum (Camperi)
Tendines mm. lumbricalium insert into Aponeuroses extensoriae
Mm. lumbricales 3 and 4 (Mm. bipennati)
Mm. lumbricales 1 and 2 (Mm. unipennati)
Proximal lumbrical tendons arise from Tendines flexoris profundi digitorum
Tendines flexoris profundi digitorum

Note: Tendines flexorum superficialis and profundi digitorum encased in Vaginae synoviales are bound to phalanges by Vaginae fibrosae made up of alternating strong anular (A) and weaker cruciform (C) parts (Partes anulares and cruciformes vaginae fibrosae).

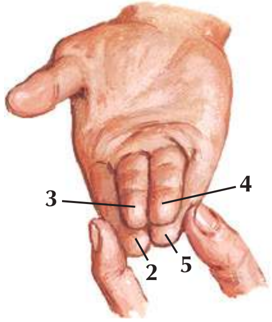

A1
A2
C1
A3
C2
A4
C3
A5
Tendines flexorum superficialis and profundi digitorum
Vagina synovialis
Ligg. palmaria

See also Plates 462, 463

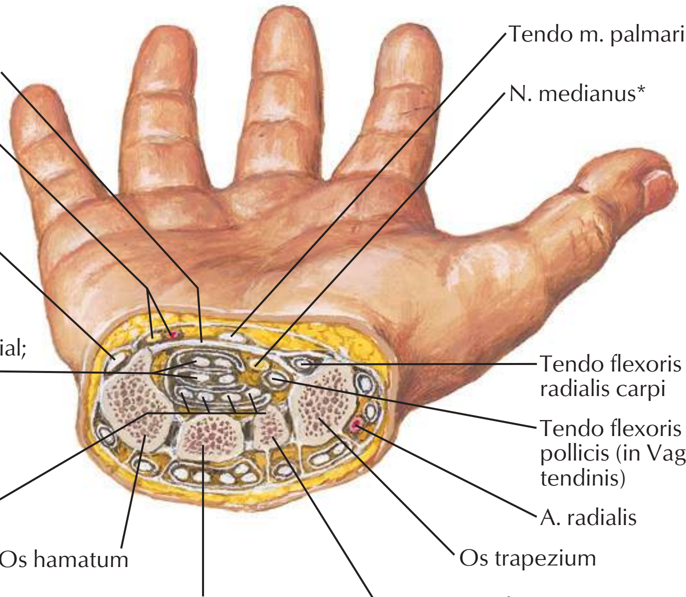
Palmar view


Adductor pollicis
Flexor brevis pollicis *(reflected)*
Mm. lumbricales
Arcus (arteriosus) palmaris superficialis
M. opponens digiti minimi
Flexor digiti minimi
Abductor digiti minimi
Os pisiforme
Tendo flexoris ulnaris carpi
N. ulnaris
A. ulnaris
Vagina communis tendinum flexorum
Tendines flexoris superficialis digitorum
Abductor brevis pollicis *(reflected)*
M. opponens pollicis *(cut)*
Os 1 metacarpi
Os trapezium
Retinaculum flexorium (Lig. transversum carpi)
Vagina tendinis flexoris radialis carpi
Lig. palmare carpi *(reflected)*
Vagina tendinis flexoris longi pollicis
Tendo flexoris radialis carpi
A. radialis
N. medianus
Tendo m. palmaris longi

Cross section of wrist demonstrating carpal tunnel

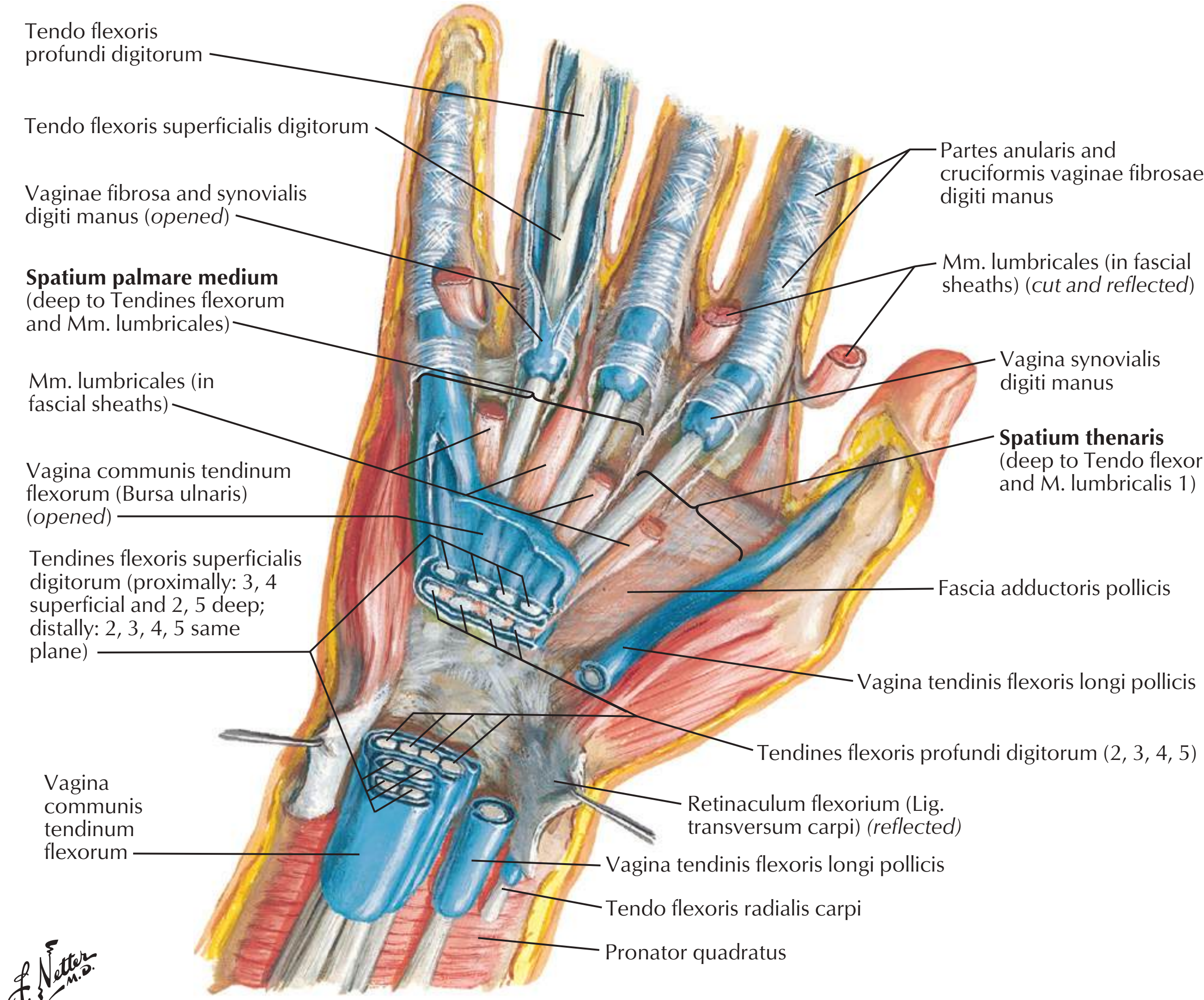


Simple method of demonstrating arrangement of Tendines flexoris superficialis digitorum within Canalis carpi

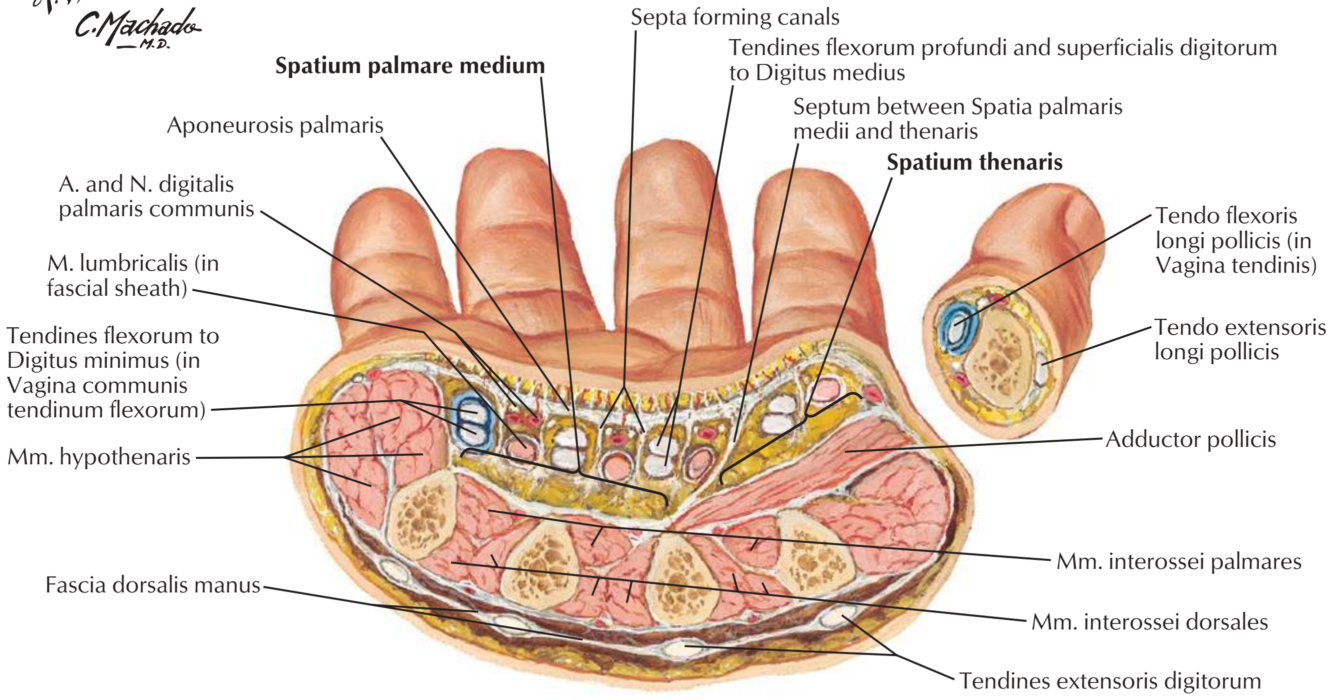

Retinaculum flexorium (Lig. transversum carpi)
A. and N. ulnaris
Tendo flexoris ulnaris carpi
Tendines flexoris superficialis digitorum* (3, 4 superficial; 2, 5 deep)
Tendines flexoris profundi digitorum* (2, 3, 4, 5)
Os hamatum
Os capitatum
Tendo m. palmaris longi
N. medianus*
Tendo flexoris radialis carpi
Tendo flexoris longi pollicis (in Vagina tendinis)
A. radialis
Os trapezium
Os trapezoideum

*Contents of Canalis carpi

Bursae, Spaces, and Tendon Sheaths of Hand

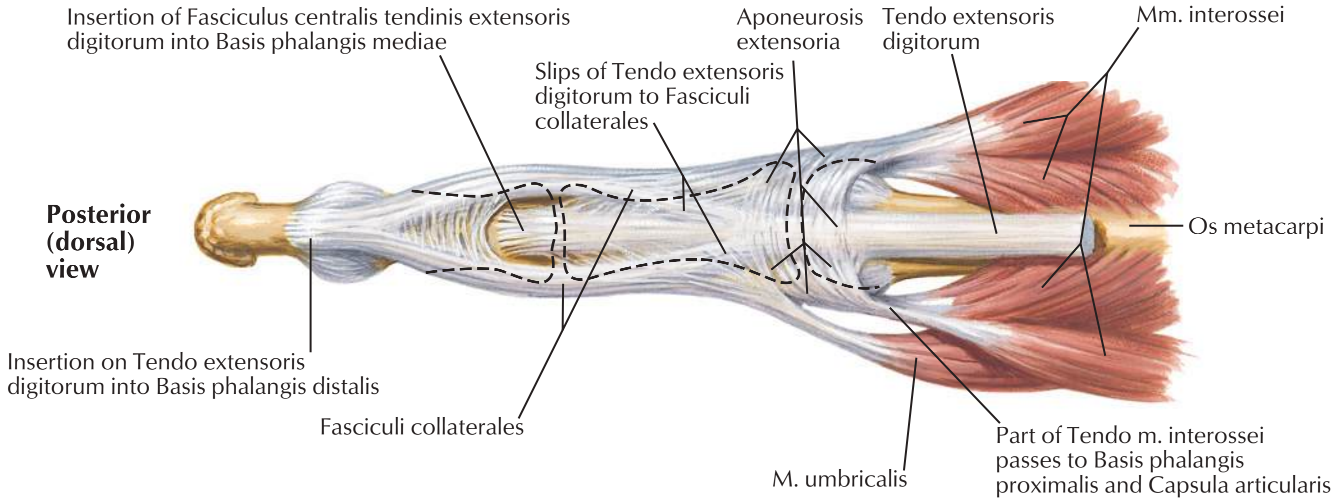

Tendo flexoris profundi digitorum
Tendo flexoris superficialis digitorum
Vaginae fibrosa and synovialis digiti manus (*opened*)
Spatium palmare medium (deep to Tendines flexorum and Mm. lumbricales)
Mm. lumbricales (in fascial sheaths)
Vagina communis tendinum flexorum (Bursa ulnaris) (*opened*)
Tendines flexoris superficialis digitorum (proximally: 3, 4 superficial and 2, 5 deep; distally: 2, 3, 4, 5 same plane)
Vagina communis tendinum flexorum
Partes anularis and cruciformis vaginae fibrosae digiti manus
Mm. lumbricales (in fascial sheaths) (*cut and reflected*)
Vagina synovialis digiti manus
Spatium thenaris (deep to Tendo flexoris and M. lumbricalis 1)
Fascia adductoris pollicis
Vagina tendinis flexoris longi pollicis
Tendines flexoris profundi digitorum (2, 3, 4, 5)
Retinaculum flexorium (Lig. transversum carpi) (*reflected*)
Vagina tendinis flexoris longi pollicis
Tendo flexoris radialis carpi
Pronator quadratus

F. Netter M.D.
C. Machado M.D.

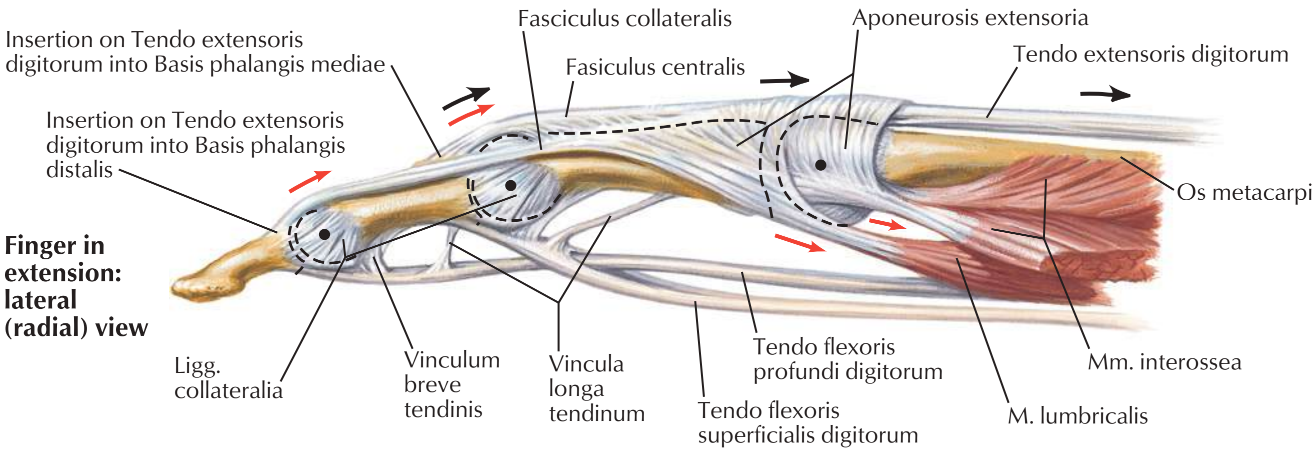

Septa forming canals
Tendines flexorum profundi and superficialis digitorum to Digitus medius
Spatium palmare medium
Septum between Spatia palmaris medii and thenaris
Spatium thenaris
Aponeurosis palmaris
A. and N. digitalis palmaris communis
M. lumbricalis (in fascial sheath)
Tendines flexorum to Digitus minimus (in Vagina communis tendinum flexorum)
Mm. hypothenaris
Fascia dorsalis manus
Tendo flexoris longi pollicis (in Vagina tendinis)
Tendo extensoris longi pollicis
Adductor pollicis
Mm. interossei palmares
Mm. interossei dorsales
Tendines extensoris digitorum

Flexor and Extensor Tendons in Fingers

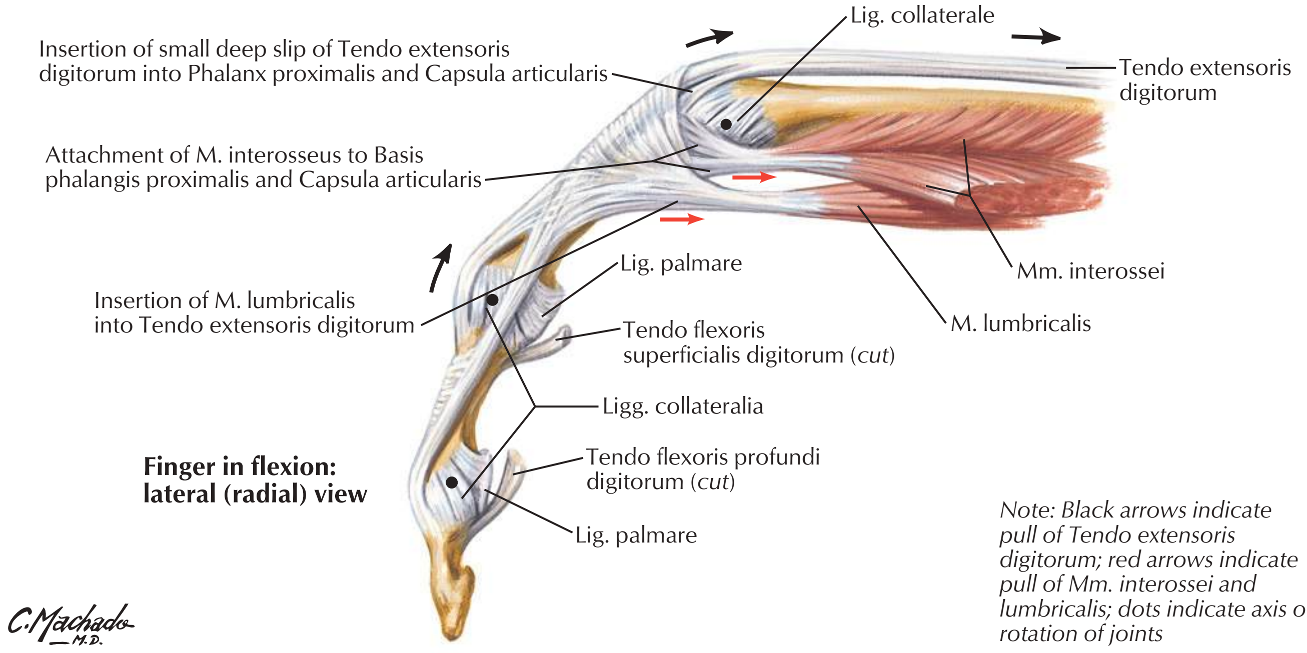
See also Plate 455


Posterior (dorsal) view

Insertion of Fasciculus centralis tendinis extensoris digitorum into Basis phalangis mediae
Aponeurosis extensoria
Tendo extensoris digitorum
Mm. interossei
Slips of Tendo extensoris digitorum to Fasciculi collaterales
Os metacarpi
Insertion on Tendo extensoris digitorum into Basis phalangis distalis
Fasciculi collaterales
M. umbricalis
Part of Tendo m. interossei passes to Basis phalangis proximalis and Capsula articularis


Finger in extension: lateral (radial) view

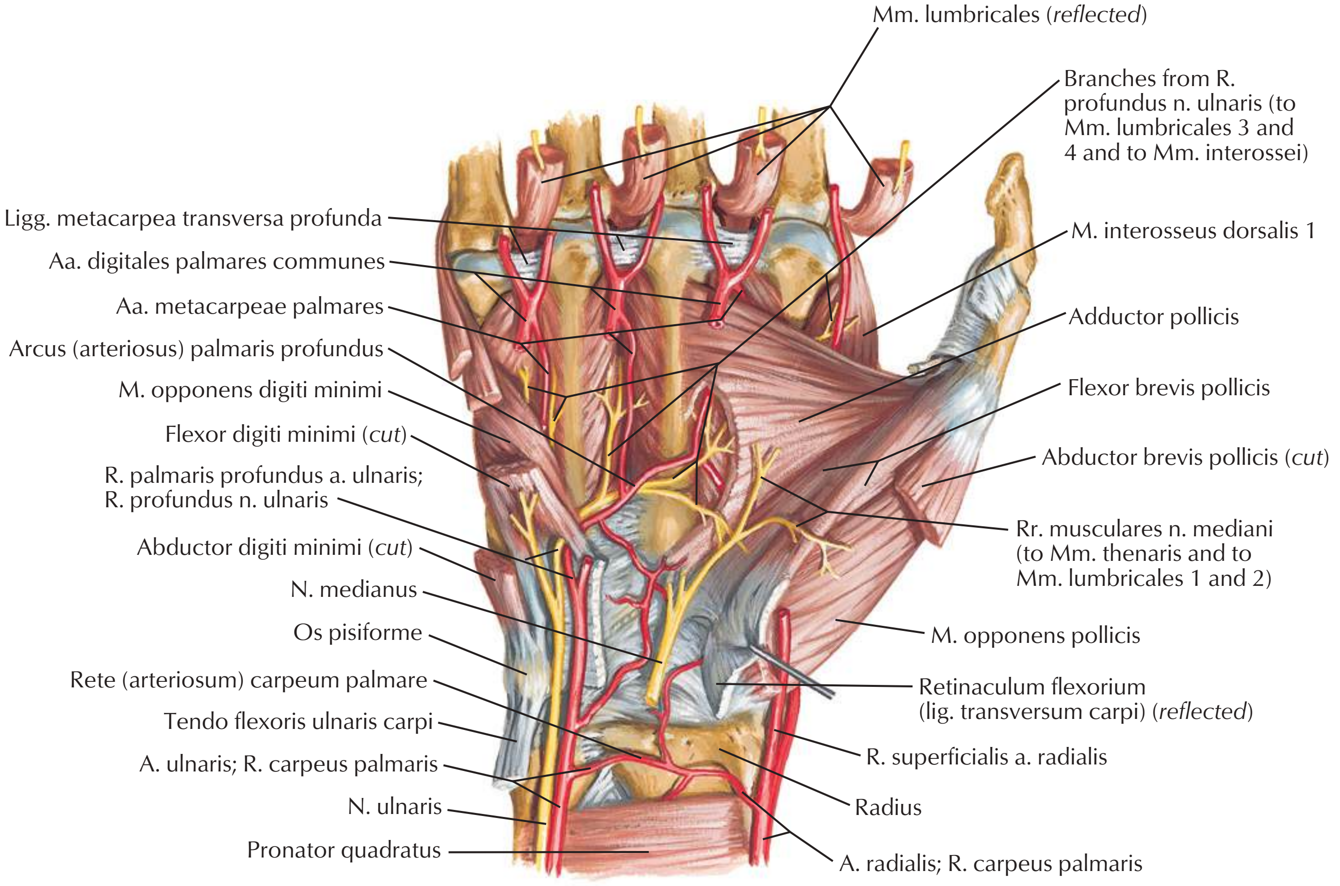
Fasciculus collateralis
Aponeurosis extensoria
Insertion on Tendo extensoris digitorum into Basis phalangis mediae
Fasiculus centralis
Tendo extensoris digitorum
Insertion on Tendo extensoris digitorum into Basis phalangis distalis
Os metacarpi
Ligg. collateralia
Vinculum breve tendinis
Vincula longa tendinum
Tendo flexoris profundi digitorum
Tendo flexoris superficialis digitorum
Mm. interossea
M. lumbricalis


Finger in flexion: lateral (radial) view

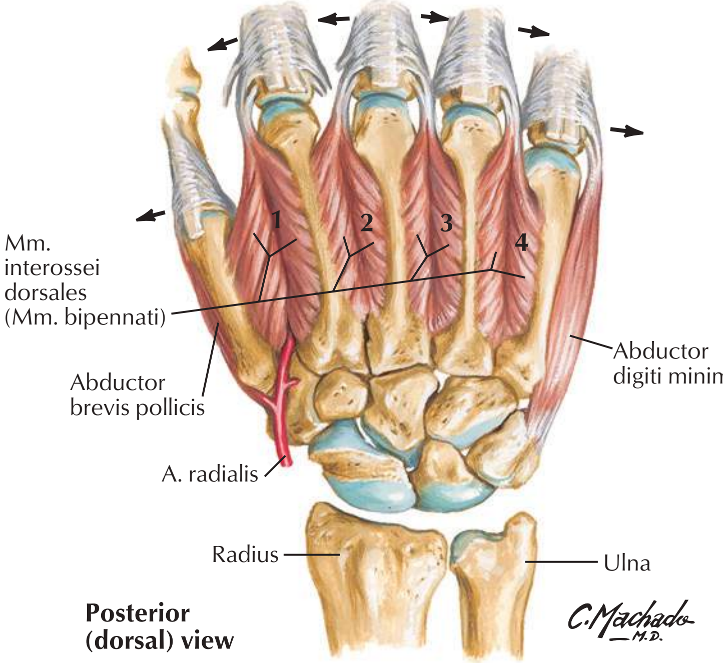
Lig. collaterale
Insertion of small deep slip of Tendo extensoris digitorum into Phalanx proximalis and Capsula articularis
Tendo extensoris digitorum
Attachment of M. interosseus to Basis phalangis proximalis and Capsula articularis
Lig. palmare
Mm. interossei
Insertion of M. lumbricalis into Tendo extensoris digitorum
Tendo flexoris superficialis digitorum (cut)
M. lumbricalis
Ligg. collateralia
Tendo flexoris profundi digitorum (cut)
Lig. palmare
C. Machado M.D.

Note: Black arrows indicate pull of Tendo extensoris digitorum; red arrows indicate pull of Mm. interossei and lumbricalis; dots indicate axis of rotation of joints

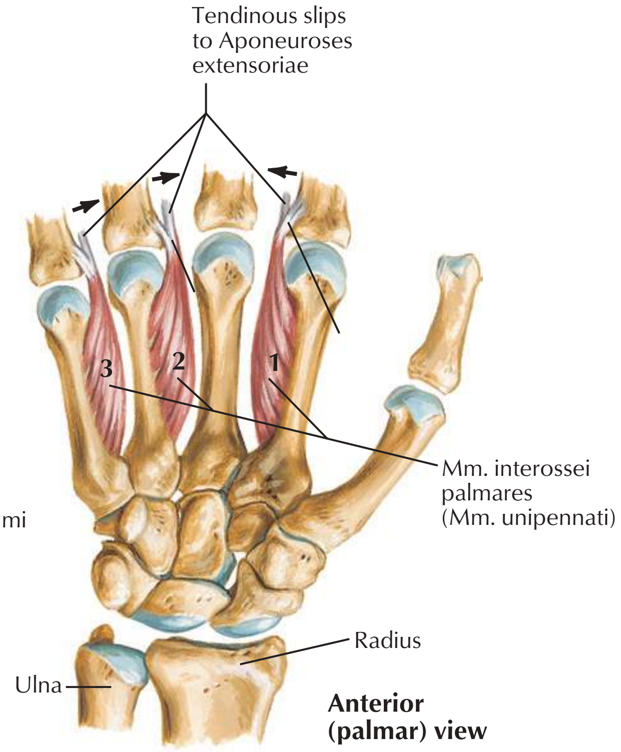
Intrinsic Muscles of Hand


Mm. lumbricales (*reflected*)
Branches from R. profundus n. ulnaris (to Mm. lumbricales 3 and 4 and to Mm. interossei)
Ligg. metacarpea transversa profunda
Aa. digitales palmares communes
Aa. metacarpeae palmares
Arcus (arteriosus) palmaris profundus
M. opponens digiti minimi
Flexor digiti minimi (*cut*)
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
Abductor digiti minimi (*cut*)
N. medianus
Os pisiforme
Rete (arteriosum) carpeum palmare
Tendo flexoris ulnaris carpi
A. ulnaris; R. carpeus palmaris
N. ulnaris
Pronator quadratus
M. interosseus dorsalis 1
Adductor pollicis
Flexor brevis pollicis
Abductor brevis pollicis (*cut*)
Rr. musculares n. mediani (to Mm. thenaris and to Mm. lumbricales 1 and 2)
M. opponens pollicis
Retinaculum flexorium (lig. transversum carpi) (*reflected*)
R. superficialis a. radialis
Radius
A. radialis; R. carpeus palmaris

Anterior (palmar) view


1
2
3
4
Mm. interossei dorsales (Mm. bipennati)
Abductor brevis pollicis
A. radialis
Radius
Ulna
Abductor digiti minimi

Posterior (dorsal) view

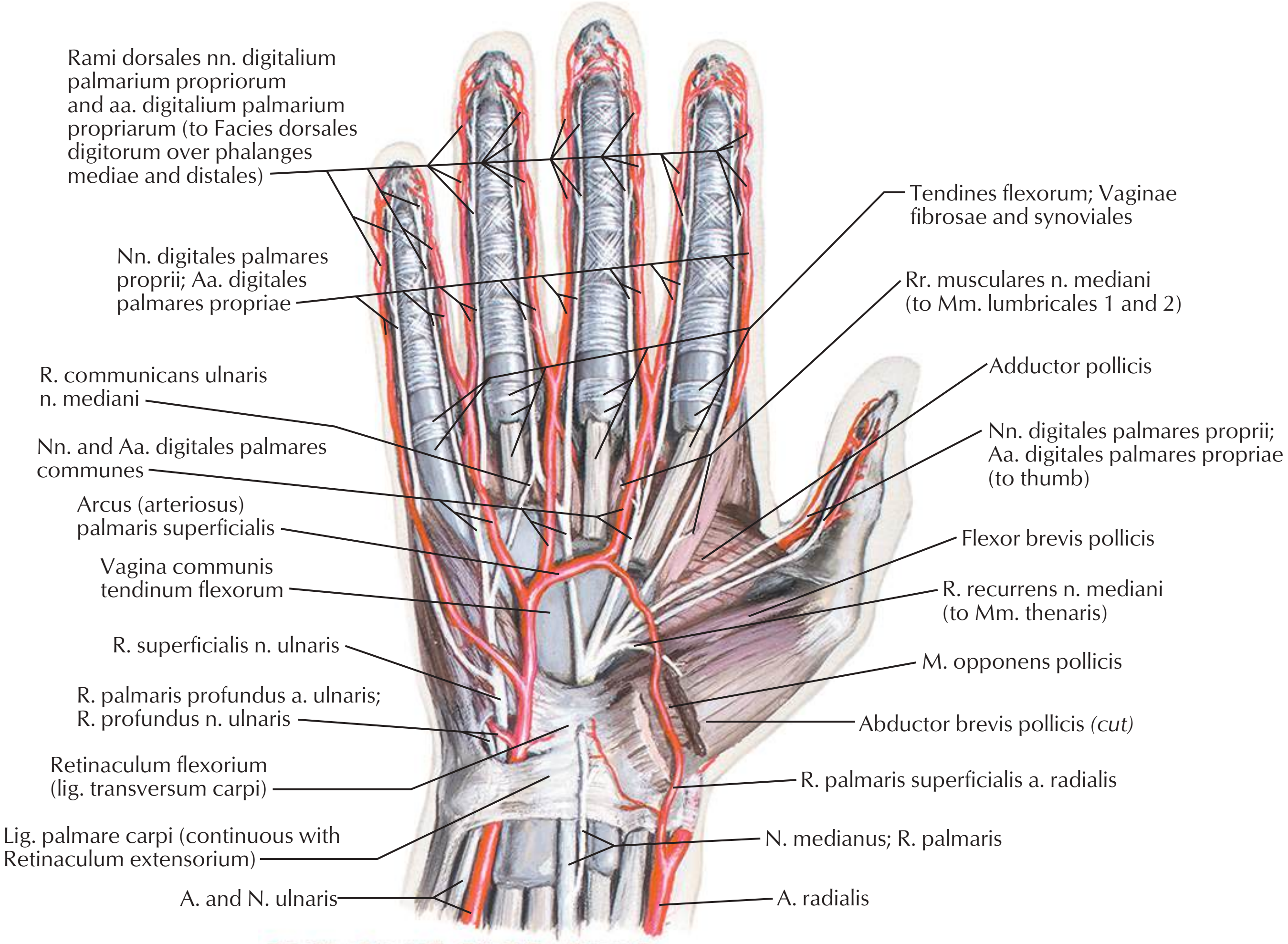

Tendinous slips to Aponeuroses extensoriae
3
2
1
Mm. interossei palmares (Mm. unipennati)
Radius
Ulna

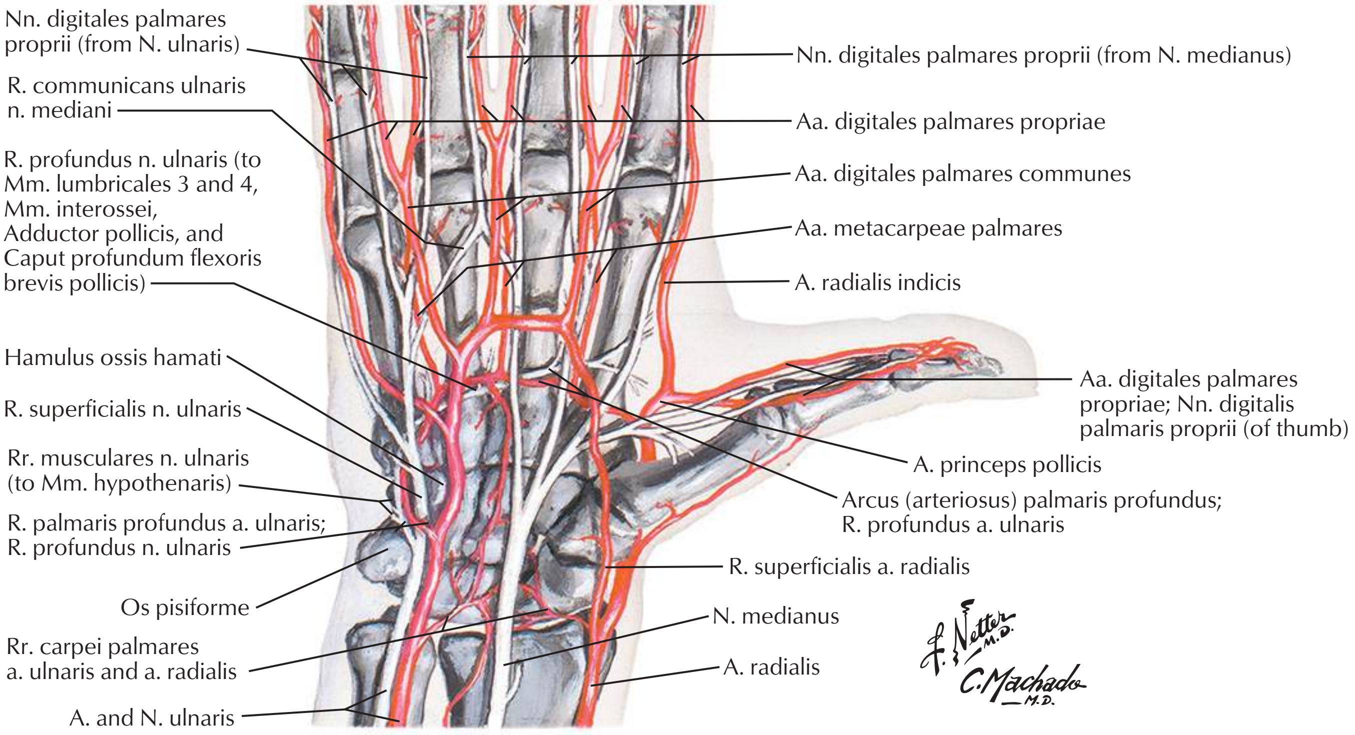
Anterior (palmar) view

Note: Arrows indicate action of muscles.

Arteries and Nerves of Hand: Palmar Views

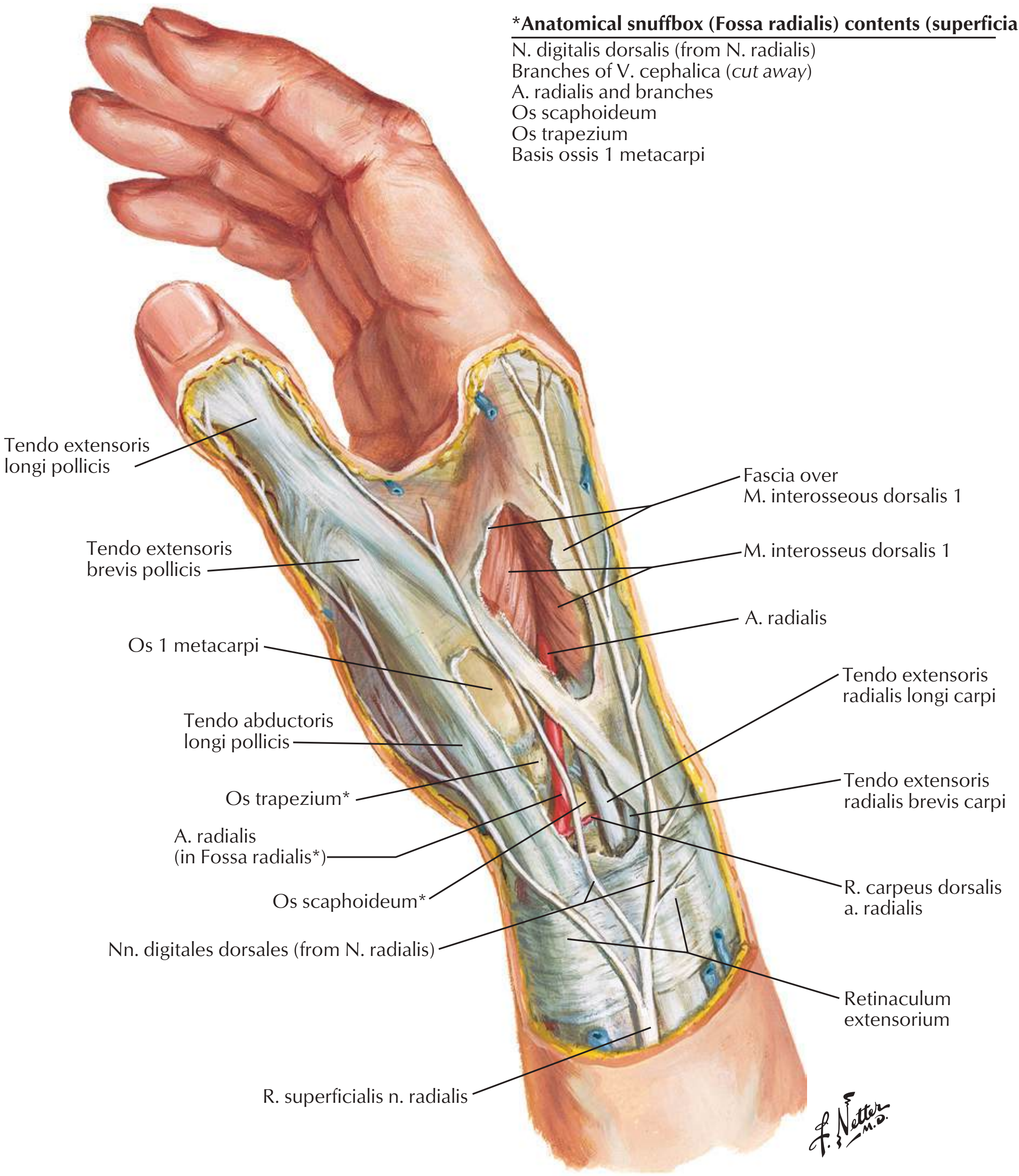
See also Plate 424


Rami dorsales nn. digitalium palmarium propriorum and aa. digitalium palmarium propriarum (to Facies dorsales digitorum over phalanges mediae and distales)
Nn. digitales palmares proprii; Aa. digitales palmares propriae
R. communicans ulnaris n. mediani
Nn. and Aa. digitales palmares communes
Arcus (arteriosus) palmaris superficialis
Vagina communis tendinum flexorum
R. superficialis n. ulnaris
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
Retinaculum flexorium (lig. transversum carpi)
Lig. palmare carpi (continuous with Retinaculum extensorium)
A. and N. ulnaris
Tendines flexorum; Vaginae fibrosae and synoviales
Rr. musculares n. mediani (to Mm. lumbricales 1 and 2)
Adductor pollicis
Nn. digitales palmares proprii; Aa. digitales palmares propriae (to thumb)
Flexor brevis pollicis
R. recurrens n. mediani (to Mm. thenaris)
M. opponens pollicis
Abductor brevis pollicis (cut)
R. palmaris superficialis a. radialis
N. medianus; R. palmaris
A. radialis


Nn. digitales palmares proprii (from N. ulnaris)
R. communicans ulnaris n. mediani
R. profundus n. ulnaris (to Mm. lumbricales 3 and 4, Mm. interossei, Adductor pollicis, and Caput profundum flexoris brevis pollicis)
Hamulus ossis hamati
R. superficialis n. ulnaris
Rr. musculares n. ulnaris (to Mm. hypothenaris)
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
Os pisiforme
Rr. carpei palmares a. ulnaris and a. radialis
A. and N. ulnaris
Nn. digitales palmares proprii (from N. medianus)
Aa. digitales palmares propriae
Aa. digitales palmares communes
Aa. metacarpeae palmares
A. radialis indicis
Aa. digitales palmares propriae; Nn. digitalis palmaris proprii (of thumb)
A. princeps pollicis
Arcus (arteriosus) palmaris profundus; R. profundus a. ulnaris
R. superficialis a. radialis
N. medianus
A. radialis
F. Netter M.D.
C. Machado M.D.

Wrist and Hand: Superficial Dissection

See also Plate 469

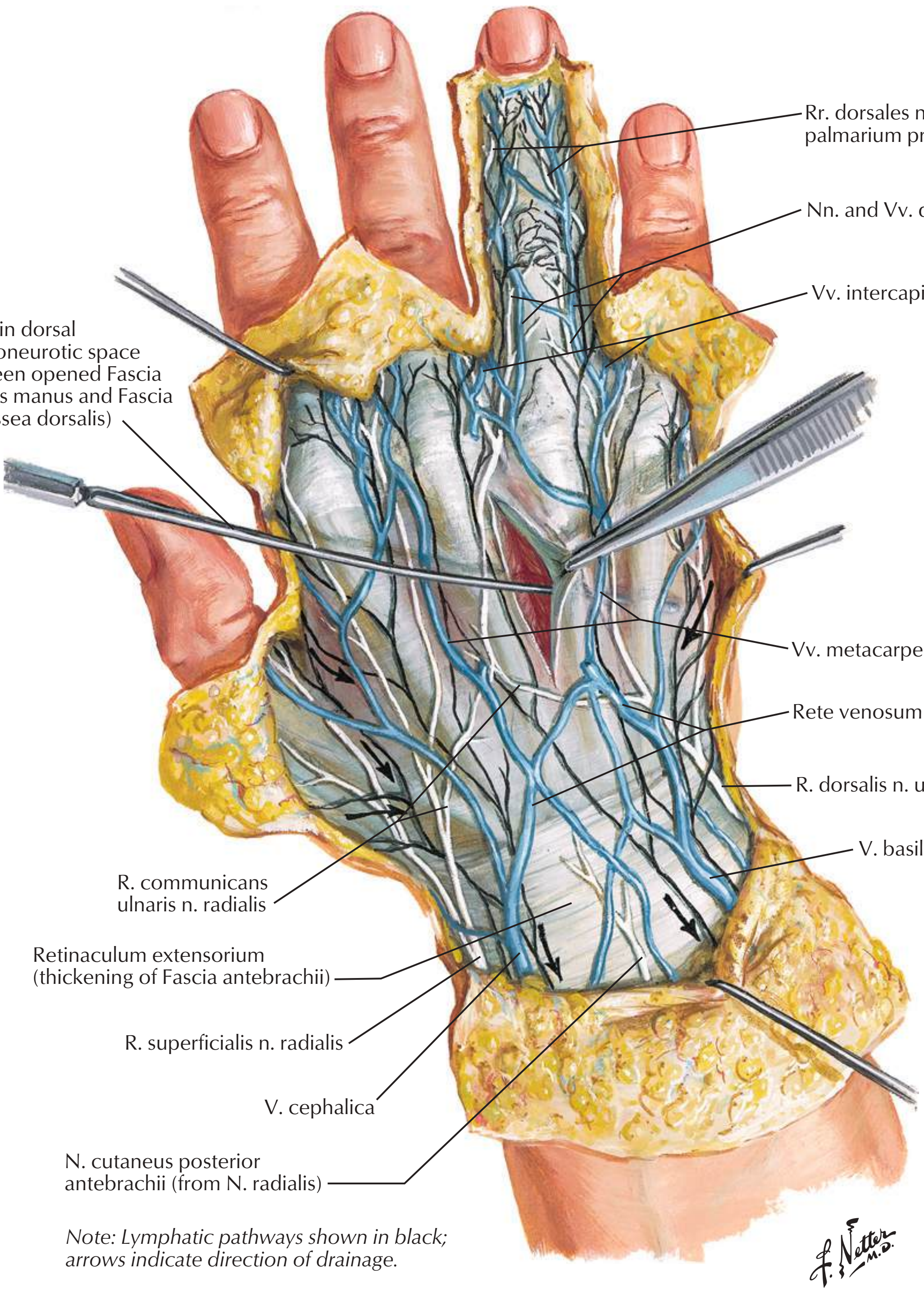

Tendo extensoris longi pollicis
Tendo extensoris brevis pollicis
Os 1 metacarpi
Tendo abductoris longi pollicis
Os trapezium*
A. radialis (in Fossa radialis*)
Os scaphoideum*
Nn. digitales dorsales (from N. radialis)
R. superficialis n. radialis
Fascia over M. interosseous dorsalis 1
M. interosseus dorsalis 1
A. radialis
Tendo extensoris radialis longi carpi
Tendo extensoris radialis brevis carpi
R. carpeus dorsalis a. radialis
Retinaculum extensorium

***Anatomical snuffbox (Fossa radialis) contents (superficial to deep)**

N. digitalis dorsalis (from N. radialis)
Branches of V. cephalica (*cut away*)
A. radialis and branches
Os scaphoideum
Os trapezium
Basis ossis 1 metacarpi

Wrist and Hand: Superficial Dorsal Dissection

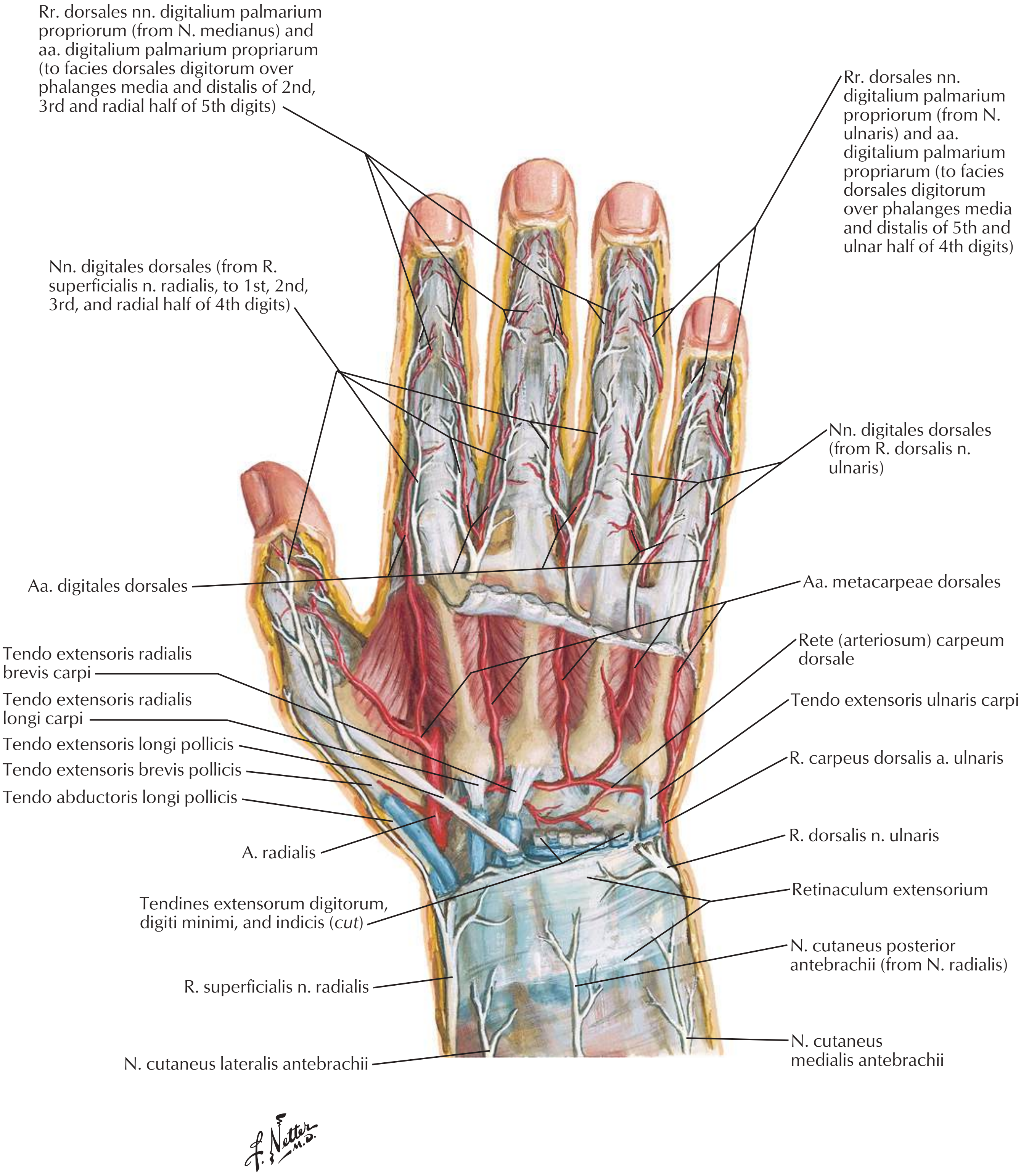
See also Plate 406

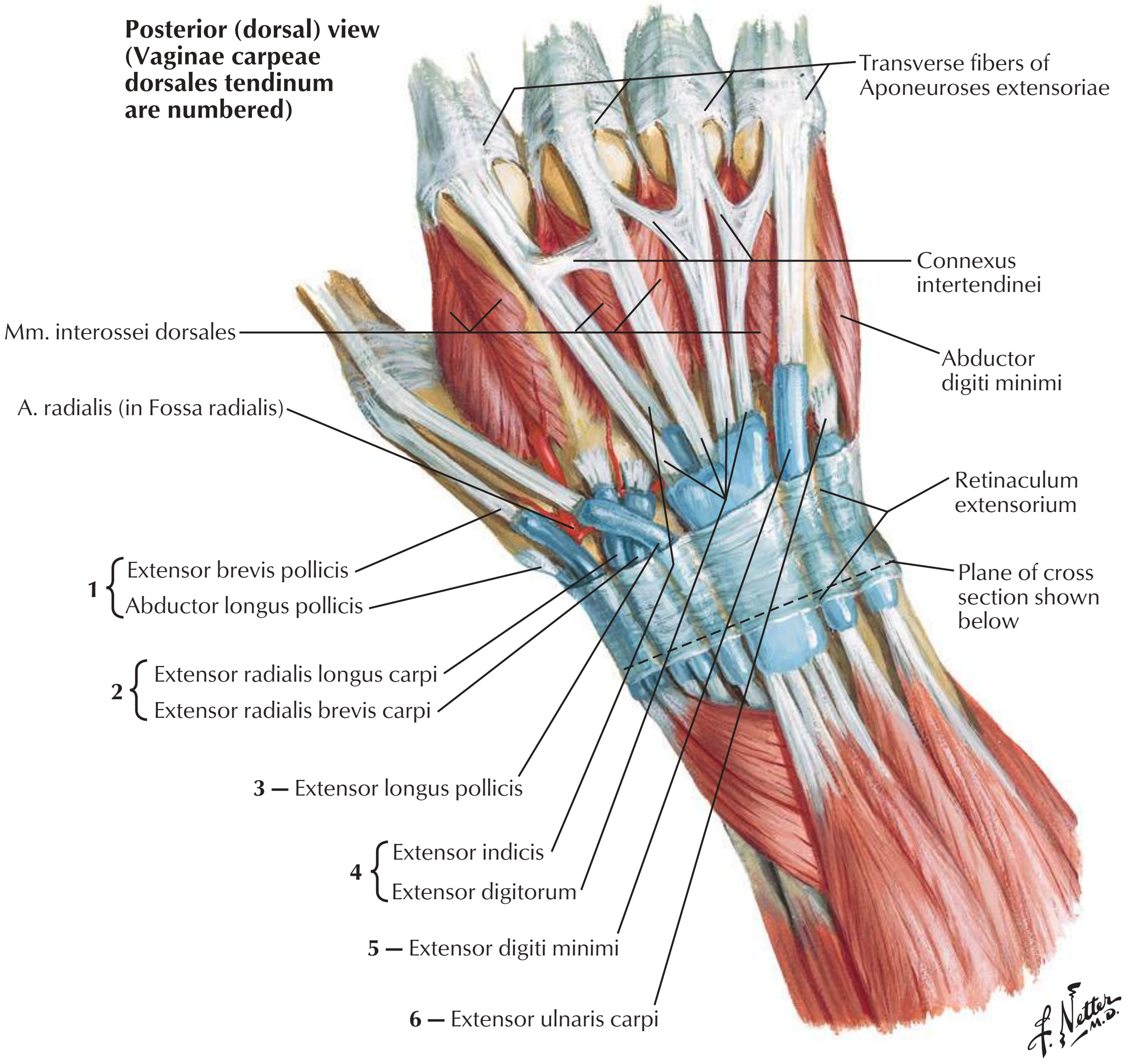

Rr. dorsales nn. digitalium palmarium propriorum
Nn. and Vv. digitales dorsales
Vv. intercapitulares
Probe in dorsal subaponeurotic space (between opened Fascia dorsalis manus and Fascia interossea dorsalis)
Vv. metacarpeae dorsales
Rete venosum dorsale manus
R. dorsalis n. ulnaris
V. basilica
R. communicans ulnaris n. radialis
Retinaculum extensorium (thickening of Fascia antebrachii)
R. superficialis n. radialis
V. cephalica
N. cutaneus posterior antebrachii (from N. radialis)
F. Netter M.D.

Note: Lymphatic pathways shown in black; arrows indicate direction of drainage.

Nerves and Arteries of Dorsal Hand and Wrist

See also Plate 460

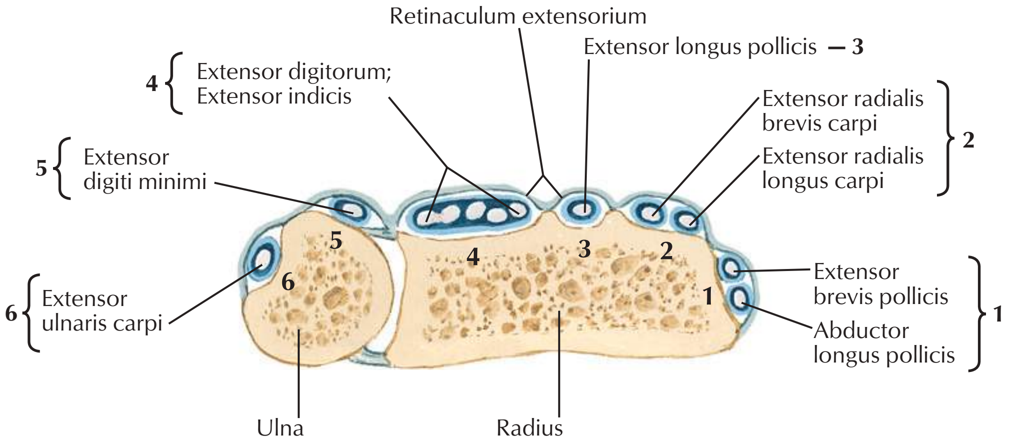

Rr. dorsales nn. digitalium palmarium propriorum (from N. medianus) and aa. digitalium palmarium propriarum (to facies dorsales digitorum over phalanges media and distalis of 2nd, 3rd and radial half of 5th digits)
Rr. dorsales nn. digitalium palmarium propriorum (from N. ulnaris) and aa. digitalium palmarium propriarum (to facies dorsales digitorum over phalanges media and distalis of 5th and ulnar half of 4th digits)
Nn. digitales dorsales (from R. superficialis n. radialis, to 1st, 2nd, 3rd, and radial half of 4th digits)
Nn. digitales dorsales (from R. dorsalis n. ulnaris)
Aa. digitales dorsales
Aa. metacarpeae dorsales
Tendo extensoris radialis brevis carpi
Rete (arteriosum) carpeum dorsale
Tendo extensoris radialis longi carpi
Tendo extensoris ulnaris carpi
Tendo extensoris longi pollicis
Tendo extensoris brevis pollicis
R. carpeus dorsalis a. ulnaris
Tendo abductoris longi pollicis
A. radialis
R. dorsalis n. ulnaris
Retinaculum extensorium
Tendines extensorum digitorum, digiti minimi, and indicis (*cut*)
N. cutaneus posterior antebrachii (from N. radialis)
R. superficialis n. radialis
N. cutaneus medialis antebrachii
N. cutaneus lateralis antebrachii



Posterior (dorsal) view (Vaginae carpeae dorsales tendinum are numbered)

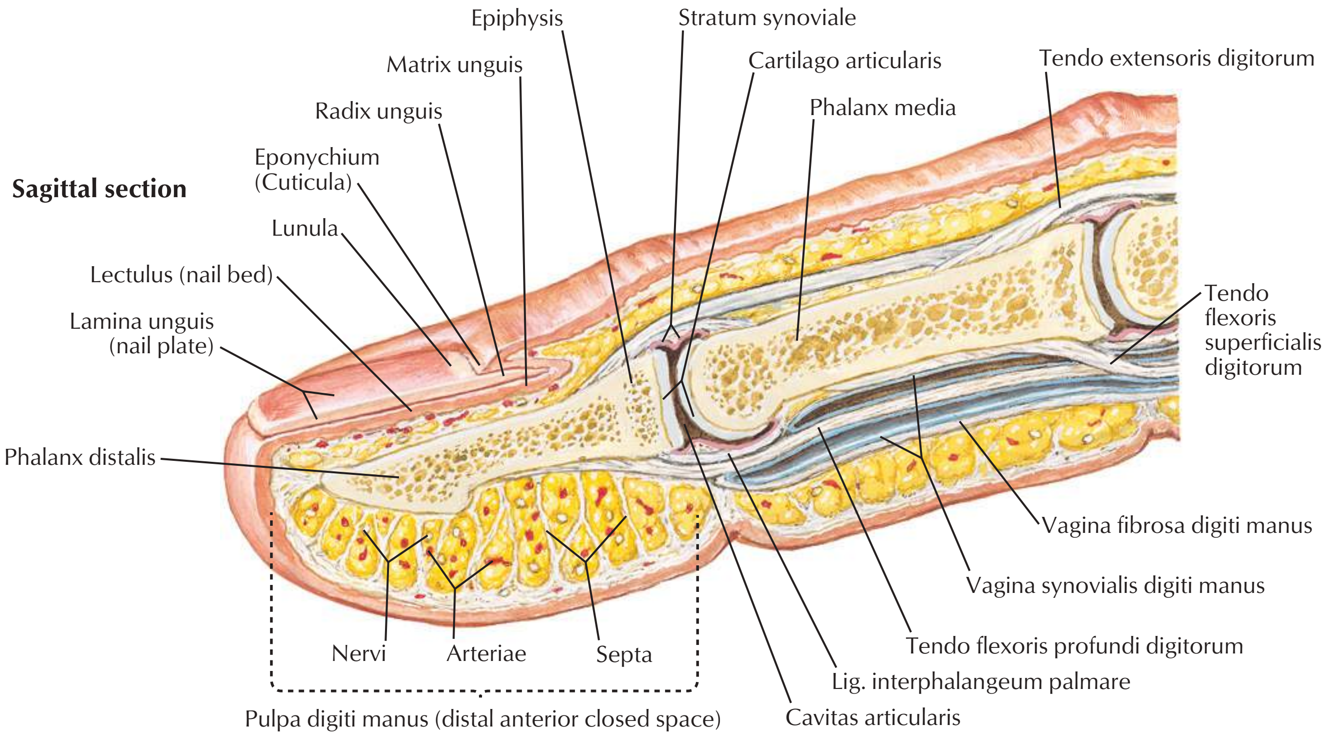
Transverse fibers of Aponeuroses extensoriae
Connexus intertendinei
Mm. interossei dorsales
Abductor digiti minimi
A. radialis (in Fossa radialis)
Retinaculum extensorium
1 Extensor brevis pollicis
Abductor longus pollicis
Plane of cross section shown below
2 Extensor radialis longus carpi
Extensor radialis brevis carpi
3 — Extensor longus pollicis
4 Extensor indicis
Extensor digitorum
5 — Extensor digiti minimi
6 — Extensor ulnaris carpi

Cross section of most distal portion of forearm

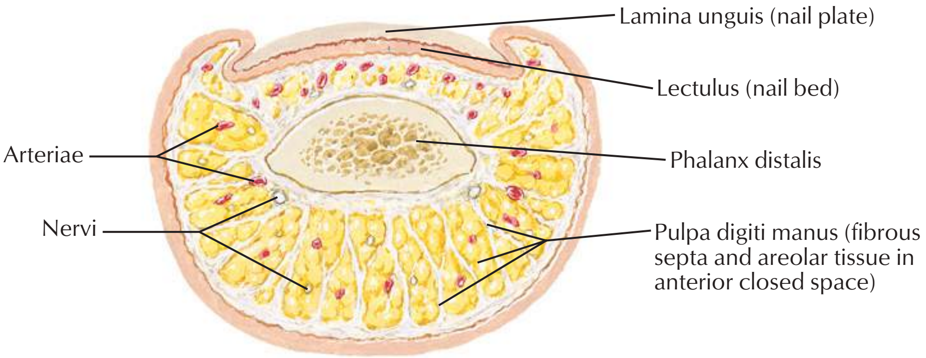


Retinaculum extensorium
Extensor longus pollicis — 3
4 Extensor digitorum; Extensor indicis
Extensor radialis brevis carpi
Extensor radialis longus carpi
2
5 Extensor digiti minimi
5
4
3
2
6
1
6 Extensor ulnaris carpi
Extensor brevis pollicis
Abductor longus pollicis
1
Ulna
Radius

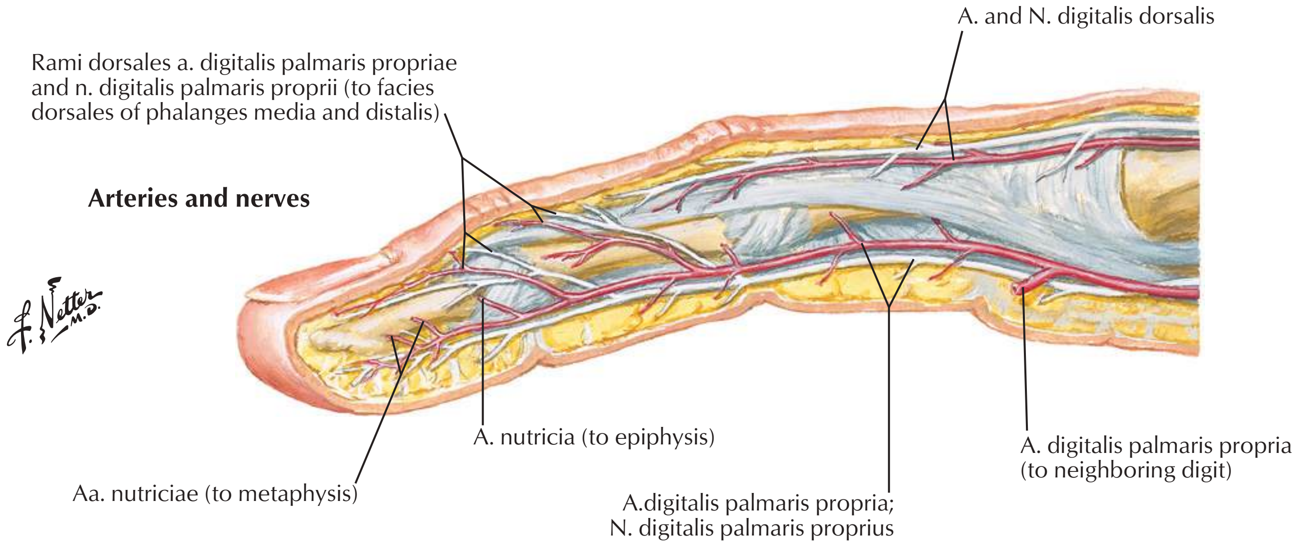
Sagittal section


Epiphysis
Stratum synoviale
Matrix unguis
Cartilago articularis
Tendo extensoris digitorum
Radix unguis
Phalanx media
Eponychium
(Cuticula)
Lunula
Lectulus (nail bed)
Lamina unguis
(nail plate)
Tendo
flexoris
superficialis
digitorum
Phalanx distalis
Vagina fibrosa digiti manus
Vagina synovialis digiti manus
Nervi
Arteriae
Septa
Tendo flexoris profundi digitorum
Lig. interphalangeum palmare
Pulpa digiti manus (distal anterior closed space)
Cavitas articularis

Cross section through distal phalanx

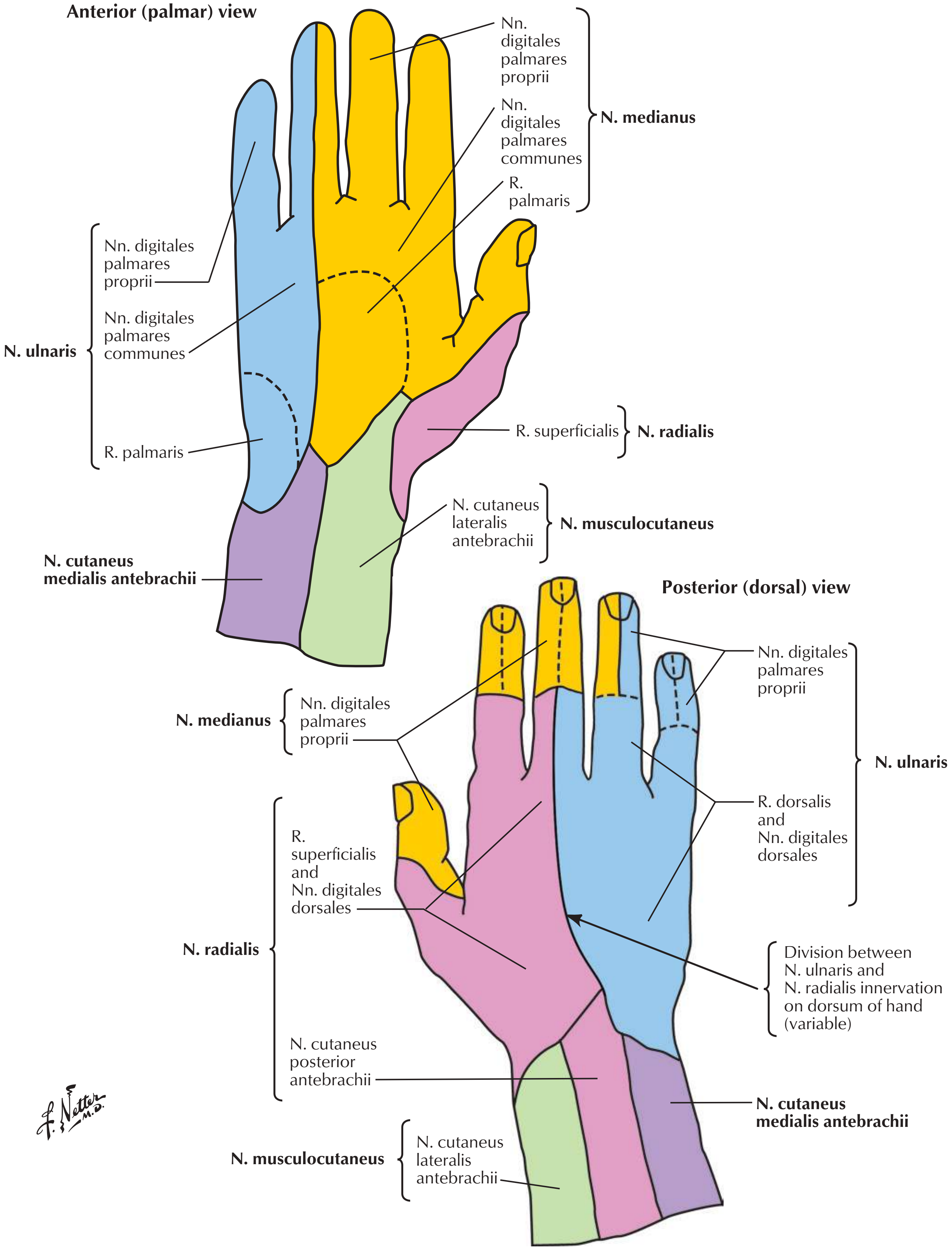

Lamina unguis (nail plate)
Lectulus (nail bed)
Arteriae
Phalanx distalis
Nervi
Pulpa digiti manus (fibrous
septa and areolar tissue in
anterior closed space)

Arteries and nerves


A. and N. digitalis dorsalis
Rami dorsales a. digitalis palmaris propriae
and n. digitalis palmaris proprii (to facies
dorsales of phalanges media and distalis)
A. nutricia (to epiphysis)
A. digitalis palmaris propria
(to neighboring digit)
Aa. nutriciae (to metaphysis)
A.digitalis palmaris propria;
N. digitalis palmaris proprius

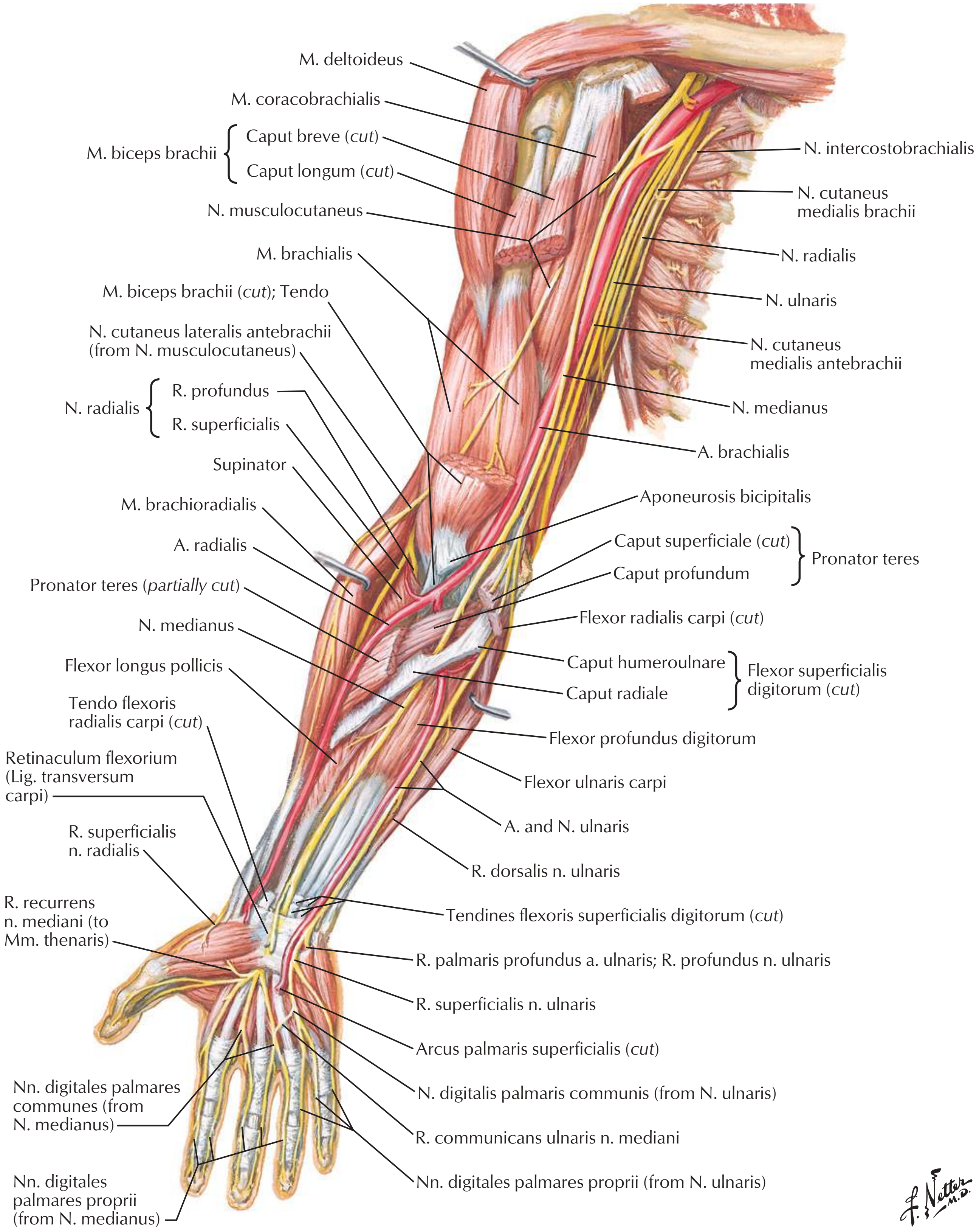
Cutaneous Innervation of Wrist and Hand

See also Plates 404, 452


Anterior (palmar) view
Nn. digitales palmares proprii
Nn. digitales palmares communes
R. palmaris
N. medianus
Nn. digitales palmares proprii
Nn. digitales palmares communes
R. palmaris
N. ulnaris
R. superficialis
N. radialis
N. cutaneus lateralis antebrachii
N. musculocutaneus
N. cutaneus medialis antebrachii
Posterior (dorsal) view
N. medianus
Nn. digitales palmares proprii
Nn. digitales palmares proprii
R. dorsalis and Nn. digitales dorsales
N. ulnaris
R. superficialis and Nn. digitales dorsales
N. radialis
Division between N. ulnaris and N. radialis innervation on dorsum of hand (variable)
N. cutaneus posterior antebrachii
N. cutaneus medialis antebrachii
N. musculocutaneus
N. cutaneus lateralis antebrachii
F. Netter M.D.

Arteries and Nerves of Upper Limb: Anterior View

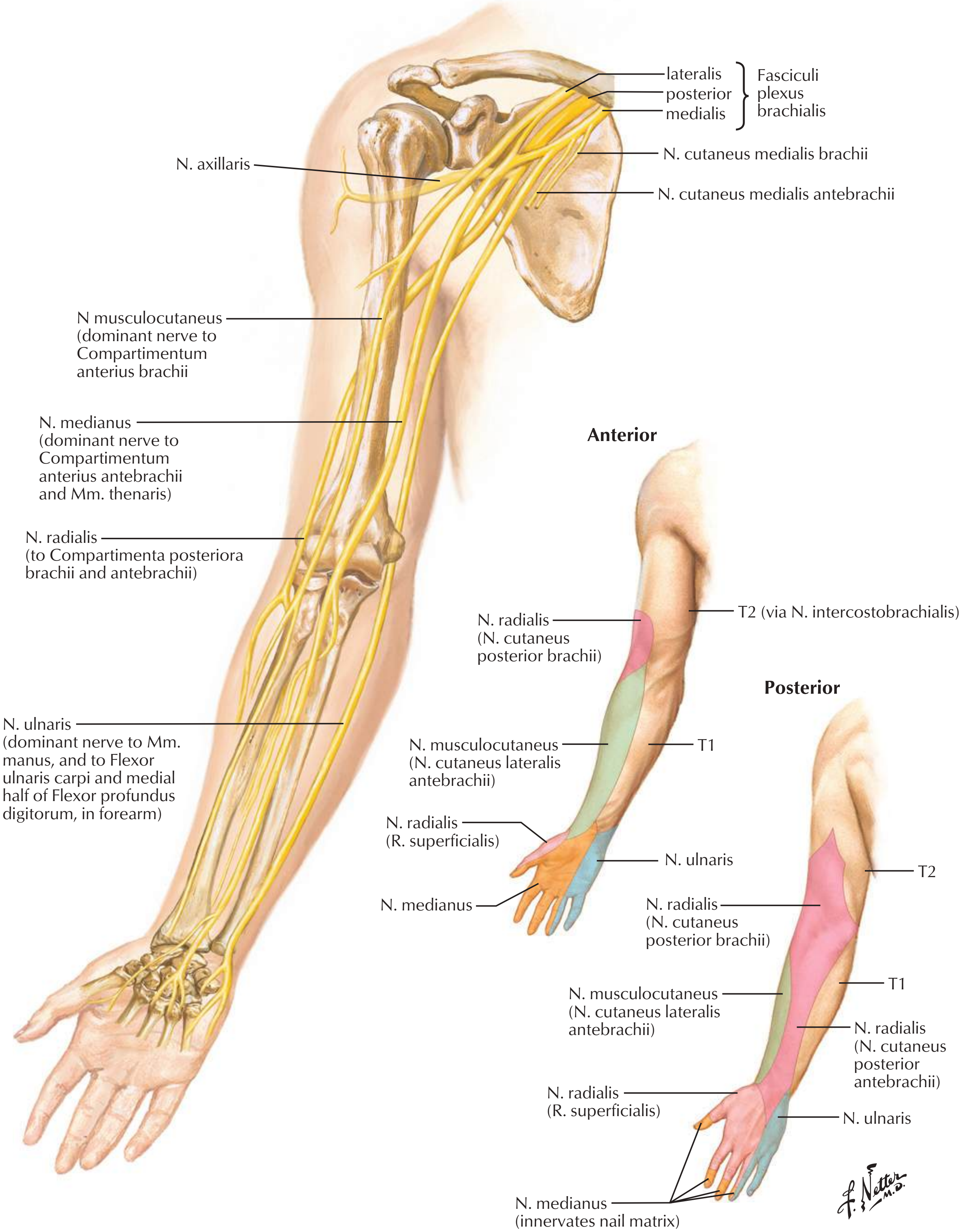
See also Plates 423, 438



M. deltoideus
M. coracobrachialis
M. biceps brachii
Caput breve (*cut*)
Caput longum (*cut*)
N. musculocutaneus
M. brachialis
M. biceps brachii (*cut*); Tendo
N. cutaneus lateralis antebrachii (from N. musculocutaneus)
N. radialis
R. profundus
R. superficialis
Supinator
M. brachioradialis
A. radialis
Pronator teres (*partially cut*)
N. medianus
Flexor longus pollicis
Tendo flexoris radialis carpi (*cut*)
Retinaculum flexorium (Lig. transversum carpi)
R. superficialis n. radialis
R. recurrens n. mediani (to Mm. thenaris)
Nn. digitales palmares communes (from N. medianus)
Nn. digitales palmares proprii (from N. medianus)
N. intercostobrachialis
N. cutaneus medialis brachii
N. radialis
N. ulnaris
N. cutaneus medialis antebrachii
N. medianus
A. brachialis
Aponeurosis bicipitalis
Caput superficiale (*cut*)
Caput profundum
Pronator teres
Flexor radialis carpi (*cut*)
Caput humeroulnare
Caput radiale
Flexor superficialis digitorum (*cut*)
Flexor profundus digitorum
Flexor ulnaris carpi
A. and N. ulnaris
R. dorsalis n. ulnaris
Tendines flexoris superficialis digitorum (*cut*)
R. palmaris profundus a. ulnaris; R. profundus n. ulnaris
R. superficialis n. ulnaris
Arcus palmaris superficialis (*cut*)
N. digitalis palmaris communis (from N. ulnaris)
R. communicans ulnaris n. mediani
Nn. digitales palmares proprii (from N. ulnaris)

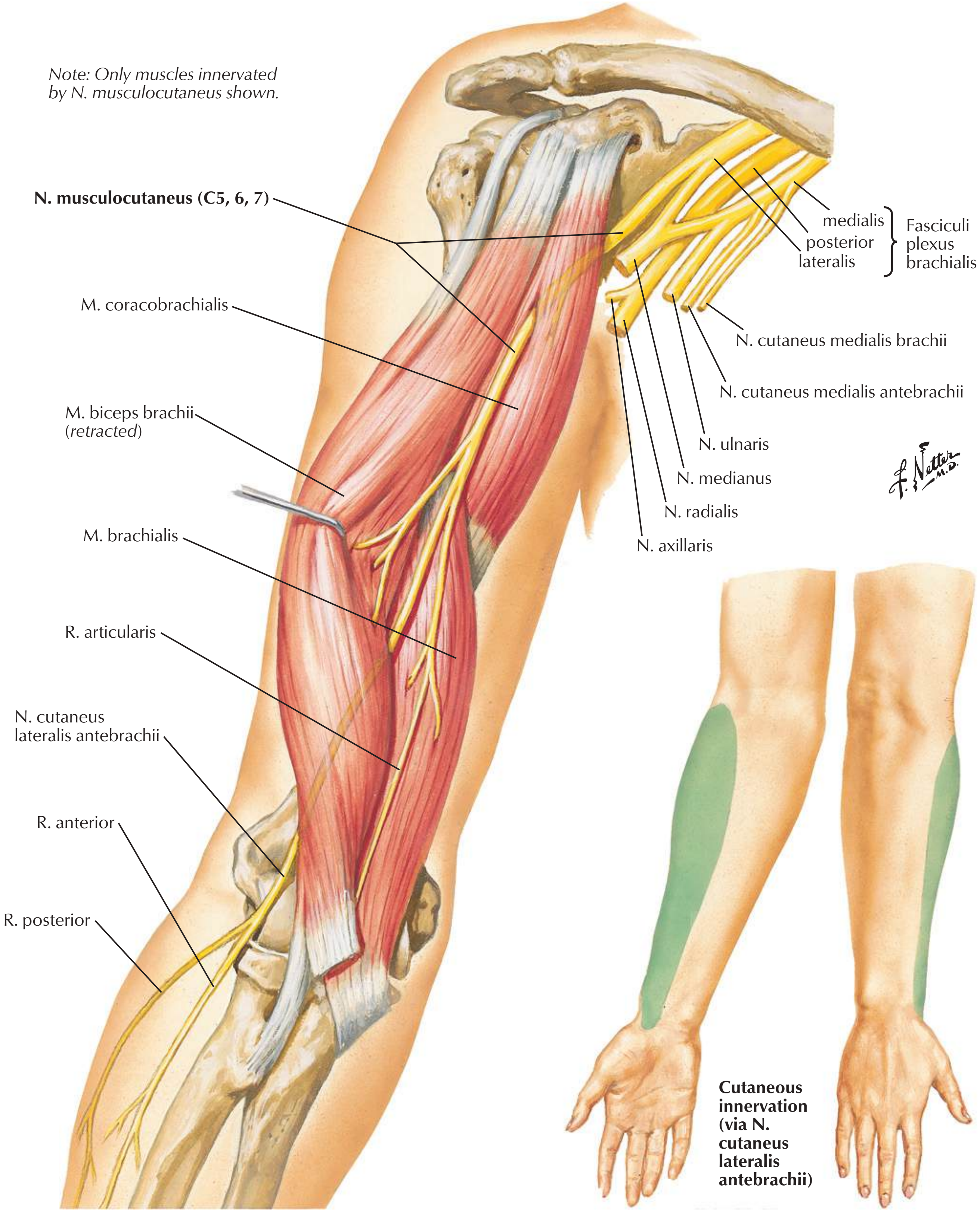
Nerves of Upper Limb

See also Plates 404, 414, 420


lateralis
posterior
medialis
Fasciculi plexus brachialis
N. cutaneus medialis brachii
N. cutaneus medialis antebrachii
N. axillaris
N musculocutaneus (dominant nerve to Compartimentum anterius brachii
N. medianus (dominant nerve to Compartimentum anterius antebrachii and Mm. thenaris)
N. radialis (to Compartimenta posteriora brachii and antebrachii)
N. ulnaris (dominant nerve to Mm. manus, and to Flexor ulnaris carpi and medial half of Flexor profundus digitorum, in forearm)
Anterior
N. radialis (N. cutaneus posterior brachii)
T2 (via N. intercostobrachialis)
N. musculocutaneus (N. cutaneus lateralis antebrachii)
T1
N. radialis (R. superficialis)
N. ulnaris
N. medianus
Posterior
T2
N. radialis (N. cutaneus posterior brachii)
N. musculocutaneus (N. cutaneus lateralis antebrachii)
T1
N. radialis (N. cutaneus posterior antebrachii)
N. radialis (R. superficialis)
N. ulnaris
N. medianus (innervates nail matrix)
F. Netter M.D.

Musculocutaneous Nerve: Anterior View

See also Plate 421

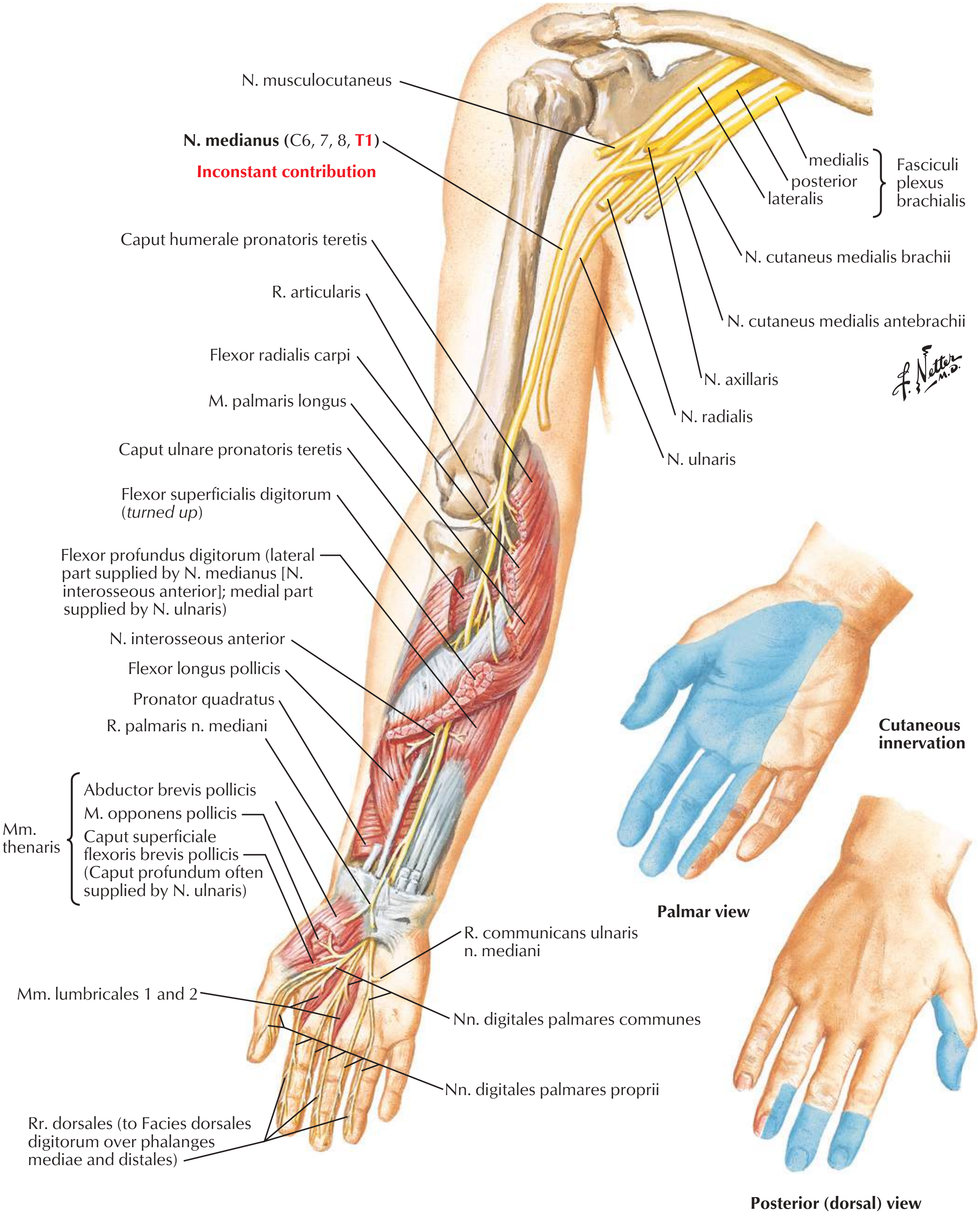

Note: Only muscles innervated by N. musculocutaneus shown.
N. musculocutaneus (C5, 6, 7)
M. coracobrachialis
M. biceps brachii (retracted)
M. brachialis
R. articularis
N. cutaneus lateralis antebrachii
R. anterior
R. posterior
medialis
posterior
lateralis
Fasciculi plexus brachialis
N. cutaneus medialis brachii
N. cutaneus medialis antebrachii
N. ulnaris
N. medianus
N. radialis
N. axillaris
Cutaneous innervation (via N. cutaneus lateralis antebrachii)

Anterior (palmar) view **Posterior (dorsal) view**

Median Nerve

See also Plates 404, 436, 437

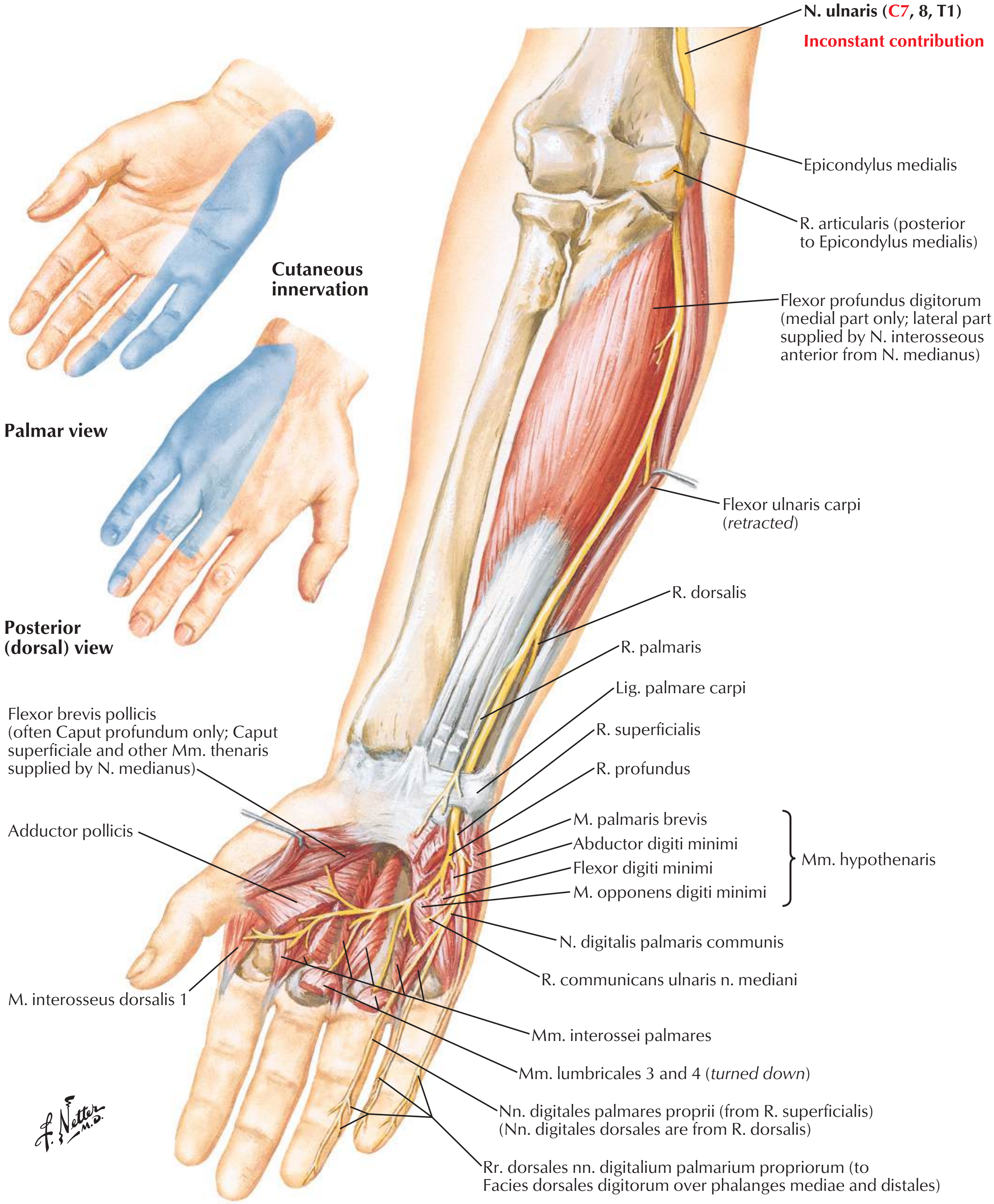
Note: Only muscles innervated by N. medianus shown.


N. musculocutaneus
N. medianus (C6, 7, 8, T1)
Inconstant contribution
Caput humerale pronatoris teretis
R. articularis
Flexor radialis carpi
M. palmaris longus
Caput ulnare pronatoris teretis
Flexor superficialis digitorum (*turned up*)
Flexor profundus digitorum (lateral part supplied by N. medianus [N. interosseous anterior]; medial part supplied by N. ulnaris)
N. interosseous anterior
Flexor longus pollicis
Pronator quadratus
R. palmaris n. mediani
Mm. thenaris
Abductor brevis pollicis
M. opponens pollicis
Caput superficiale flexoris brevis pollicis (Caput profundum often supplied by N. ulnaris)
Mm. lumbricales 1 and 2
Rr. dorsales (to Facies dorsales digitorum over phalanges mediae and distales)
medialis
posterior
lateralis
Fasciculi plexus brachialis
N. cutaneus medialis brachii
N. cutaneus medialis antebrachii
N. axillaris
N. radialis
N. ulnaris
F. Netter M.D.
R. communicans ulnaris n. mediani
Nn. digitales palmares communes
Nn. digitales palmares proprii
Cutaneous innervation
Palmar view
Posterior (dorsal) view

Ulnar Nerve

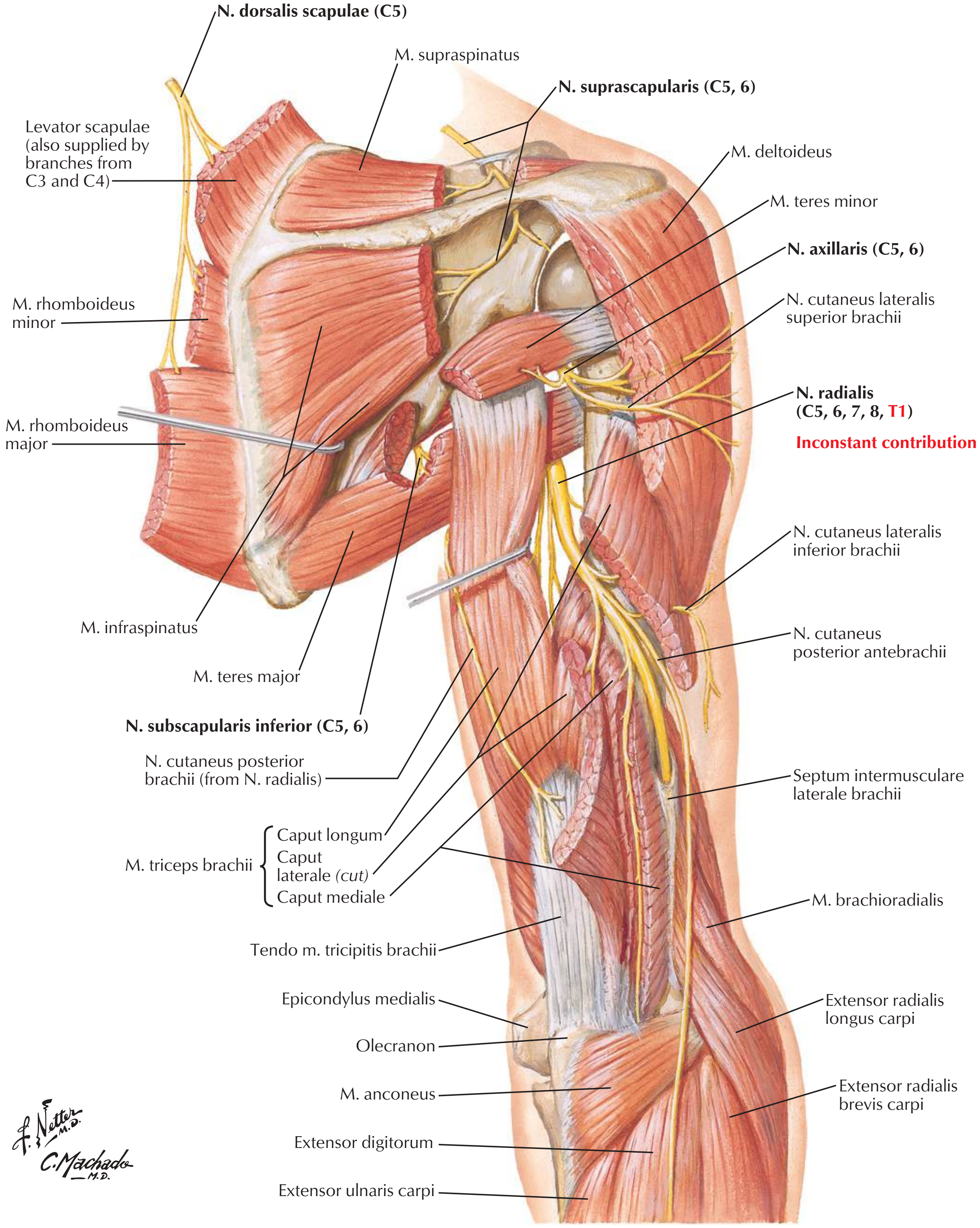
See also Plates 436, 438

Note: Only muscles innervated by N. ulnaris shown.


N. ulnaris (C7, 8, T1)
Inconstant contribution
Epicondylus medialis
R. articularis (posterior to Epicondylus medialis)
Flexor profundus digitorum (medial part only; lateral part supplied by N. interosseous anterior from N. medianus)
Flexor ulnaris carpi (*retracted*)
R. dorsalis
R. palmaris
Lig. palmare carpi
R. superficialis
R. profundus
M. palmaris brevis
Abductor digiti minimi
Flexor digiti minimi
M. opponens digiti minimi
Mm. hypothenaris
N. digitalis palmaris communis
R. communicans ulnaris n. mediani
Mm. interossei palmares
Mm. lumbricales 3 and 4 (*turned down*)
Nn. digitales palmares proprii (from R. superficialis) (Nn. digitales dorsales are from R. dorsalis)
Rr. dorsales nn. digitalium palmarium propriorum (to Facies dorsales digitorum over phalanges mediae and distales)
Cutaneous innervation
Palmar view
Posterior (dorsal) view
Flexor brevis pollicis (often Caput profundum only; Caput superficiale and other Mm. thenaris supplied by N. medianus)
Adductor pollicis
M. interosseus dorsalis 1

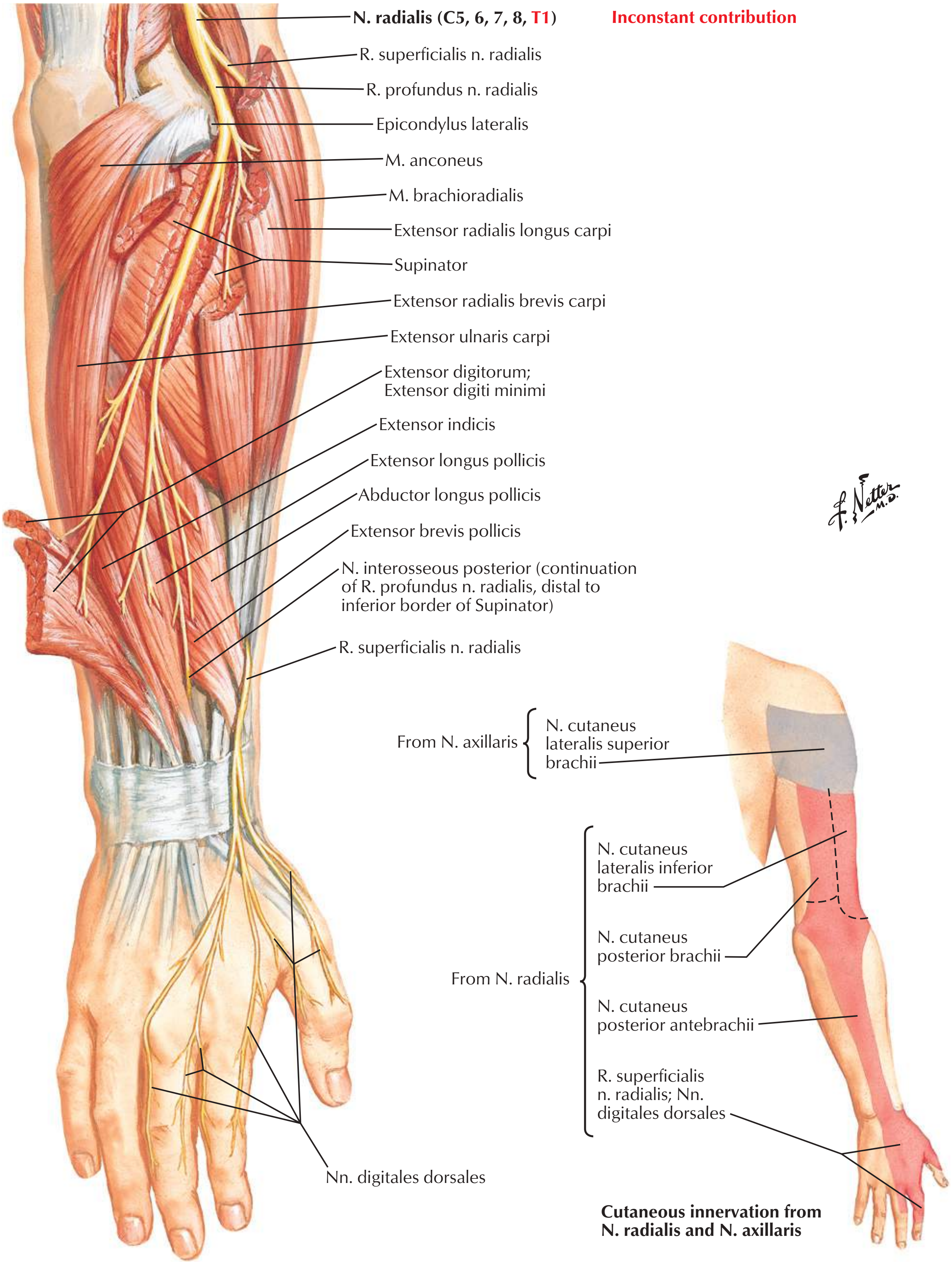
Radial Nerve in Arm and Nerves of Posterior Shoulder: Posterior View

See also Plates 417, 422


N. dorsalis scapulae (C5)
M. supraspinatus
N. suprascapularis (C5, 6)
Levator scapulae (also supplied by branches from C3 and C4)
M. deltoideus
M. teres minor
N. axillaris (C5, 6)
N. cutaneus lateralis superior brachii
M. rhomboideus minor
N. radialis (C5, 6, 7, 8, T1)
Inconstant contribution
M. rhomboideus major
N. cutaneus lateralis inferior brachii
M. infraspinatus
N. cutaneus posterior antebrachii
M. teres major
N. subscapularis inferior (C5, 6)
N. cutaneus posterior brachii (from N. radialis)
Septum intermusculare laterale brachii
M. triceps brachii
Caput longum
Caput laterale *(cut)*
Caput mediale
M. brachioradialis
Tendo m. tricipitis brachii
Epicondylus medialis
Extensor radialis longus carpi
Olecranon
M. anconeus
Extensor radialis brevis carpi
Extensor digitorum
Extensor ulnaris carpi
F. Netter M.D.
C. Machado M.D.

Radial Nerve in Forearm and Hand

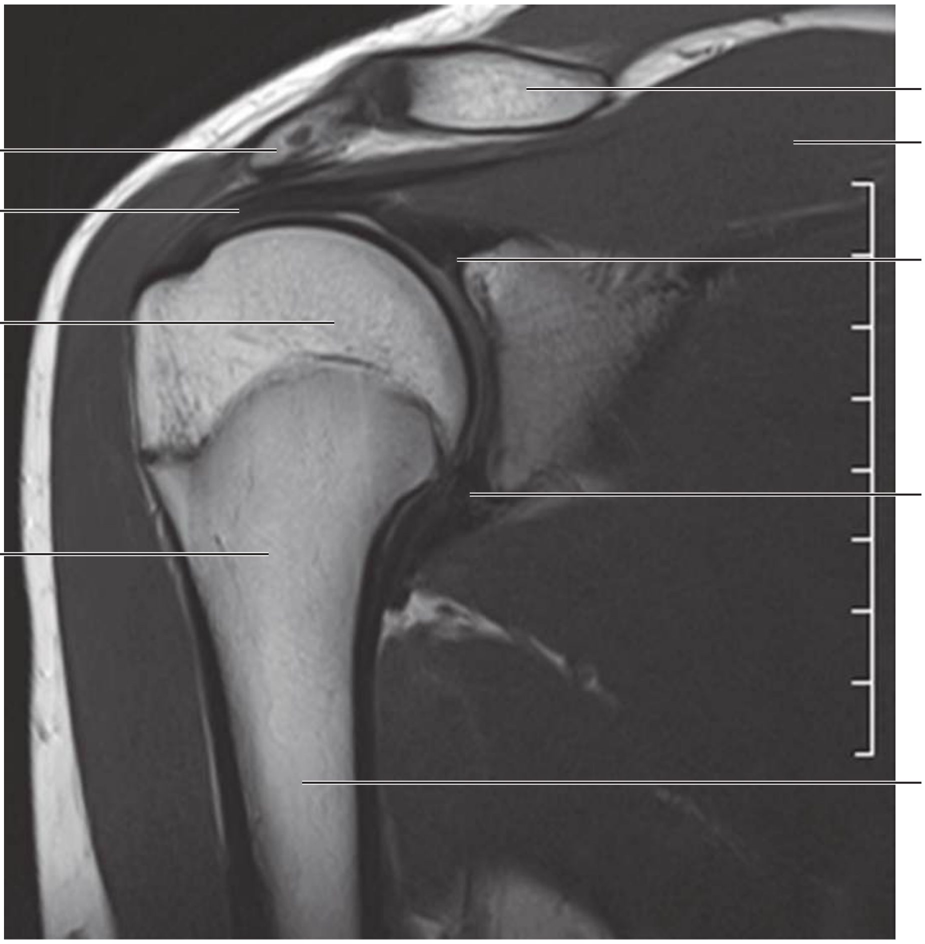
See also Plates 434, 457


N. radialis (C5, 6, 7, 8, T1)
Inconstant contribution
R. superficialis n. radialis
R. profundus n. radialis
Epicondylus lateralis
M. anconeus
M. brachioradialis
Extensor radialis longus carpi
Supinator
Extensor radialis brevis carpi
Extensor ulnaris carpi
Extensor digitorum; Extensor digiti minimi
Extensor indicis
Extensor longus pollicis
Abductor longus pollicis
Extensor brevis pollicis
N. interosseous posterior (continuation of R. profundus n. radialis, distal to inferior border of Supinator)
R. superficialis n. radialis
Nn. digitales dorsales
From N. axillaris
N. cutaneus lateralis superior brachii
From N. radialis
N. cutaneus lateralis inferior brachii
N. cutaneus posterior brachii
N. cutaneus posterior antebrachii
R. superficialis n. radialis; Nn. digitales dorsales

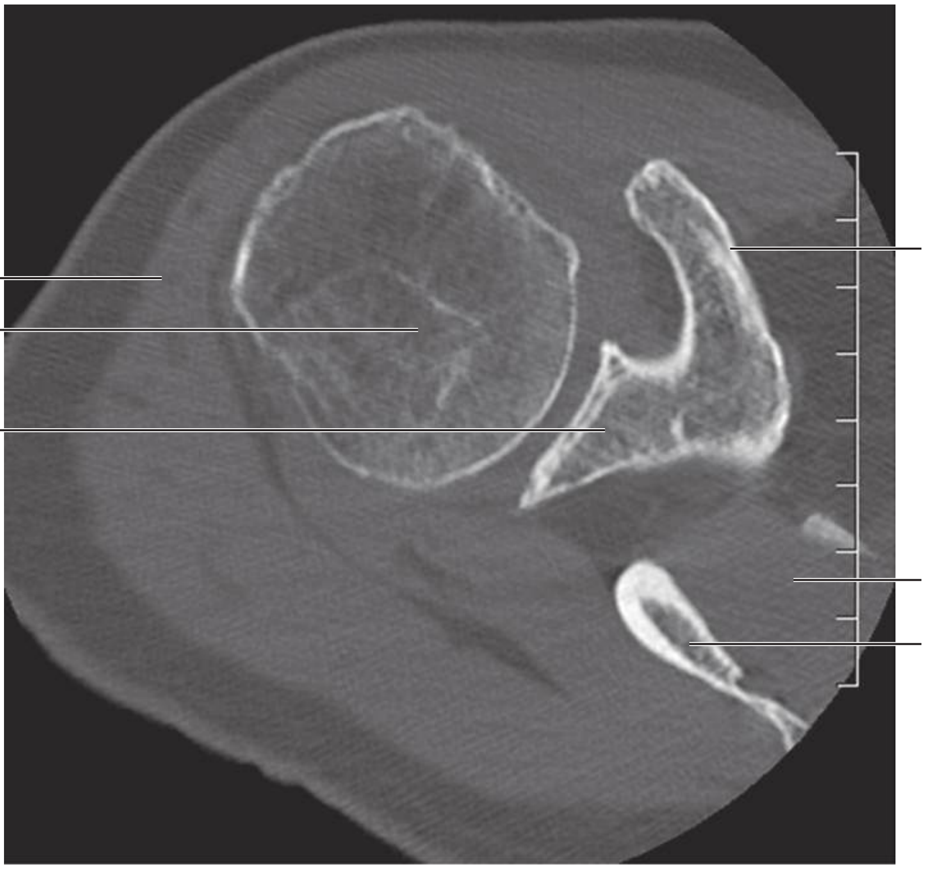
Cutaneous innervation from N. radialis and N. axillaris

See also Plates 245, 412

Coronal Proton-Density MRI of Glenohumeral joint


Clavicula
M. supraspinatus
Acromion
Tendo m. supraspinati
Labrum glenoideum
Caput humeri
Labrum glenoideum
Collum chirurgicum
Humerus

Axial CT Image of Glenohumeral joint


Proc. coracoideus
M. deltoideus
Caput humeri
Fossa glenoidea
M. supraspinatus
Spina scapulae

Structures with High* Clinical Significance

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA SKELETALE		
Clavicula	Most clavicular fractures are caused from a fall on an outstretched arm or direct trauma delivered to the lateral side of the shoulder. Middle third of the clavicle is most commonly fractured due to the changing bony morphology of the clavicle, its strutlike function, and ligament attachments.	408, 409
Humerus	The proximal humerus, especially the collum chirurgicum, is fractured due to low-energy falls in the elderly and high-energy trauma in youth. The N. axillaris is in harm's way and the Aa. circumflexae humeri can be injured. Midshaft fractures are also relatively common and place the N. radialis in harm's way.	411
Ulna	Subcutaneous location of olecranon makes it vulnerable to fracture by direct trauma, especially when elbow is flexed; Proc. styloideus ulnae may also be fractured in distal radial fractures	426, 429
Radius	Fractures of distal radius are most common fracture of upper extremity, typically caused by fall on outstretched hand	429
Os scaphoideum	Most commonly fractured carpal bone; fracture is often due to fall on outstretched hand	439, 440, 442
SYSTEMA MUSCULARE		
Mm. cuffiae musculotendineae	Injuries to rotator cuff muscles can be from an acute injury or chronic overuse injury leading to common causes of shoulder pain and disability	412, 415, 422
Tendo musculi supraspinati	Most commonly injured rotator (compressor) cuff muscle tendon complex. Often torn beneath the acromion	415, 417, 422
Tendo musculi bicipitis brachii	Proximally the caput longum of the biceps brachii tears in the elderly from falls on an outstretched arm, and distally the biceps tendon is used to perform flexor compartment reflex assessing Nn. spinales C5 and C6	421, 423
Caput longum musculi bicipitis brachii	When caput longum has been ruptured, it pulls off tuberculum supraglenoideum and retracts down into arm; muscle bulges (Popeye deformity) at midshaft of humerus	421
Mm. posteriores antebrachii	Repetitive use of muscles arising from common extensor origin can damage tendons and produce pain over epicondylus lateralis, associated with tennis elbow	431
Mm. anteriores antebrachii	Repetitive use of muscles arising from common flexor origin can damage tendons and produce pain over epicondylus medialis	432, 433
SYSTEMA NERVOSUM		
N. thoracicus longus	Injury may produce "winged scapula" caused by denervation of M. serratus anterior	417, 419
N. axillaris	Position of nerve close to medial aspect of caput humeri makes it vulnerable to injury with fractures of collum chirurgicum humeri or humeral dislocations	422
N. medianus	Commonly compressed in canalis carpi, producing pain and paresthesia in lateral three and one-half digits	450, 466
R. recurrens nervi mediani	May be injured in superficial lacerations of palm over eminentia thenaris	449
N. ulnaris	Vulnerable to compression or injury where it passes posterior to epicondylus medialis humeri, and at wrist in canalis ulnaris (Guyoni)	463, 467
N. radialis	Vulnerable to compression or injury where it lies against humerus in sulcus radialis (e.g., with humeral fracture); common symptom is "wrist drop" due to weakness of wrist extensors	468, 469

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA CARDIOVASCULARE		
V. mediana cubiti	Accessed in fossa cubitalis for venipuncture	405
Aa. suprascapularis, dorsalis scapulae, and circumflexa scapulae	Provide collateral circulation around scapula, allowing blood to reach distal part of upper extremity if A. axillaris is blocked or compressed	418
A. brachialis	Palpated in fossa cubitalis to assess brachial pulse prior to taking blood pressure measurement	423, 424
A. radialis	Palpated at lateral aspect of wrist to assess radial pulse	424

*Selections were based largely on clinical data as well as commonly covered clinical correlations in gross anatomy courses.

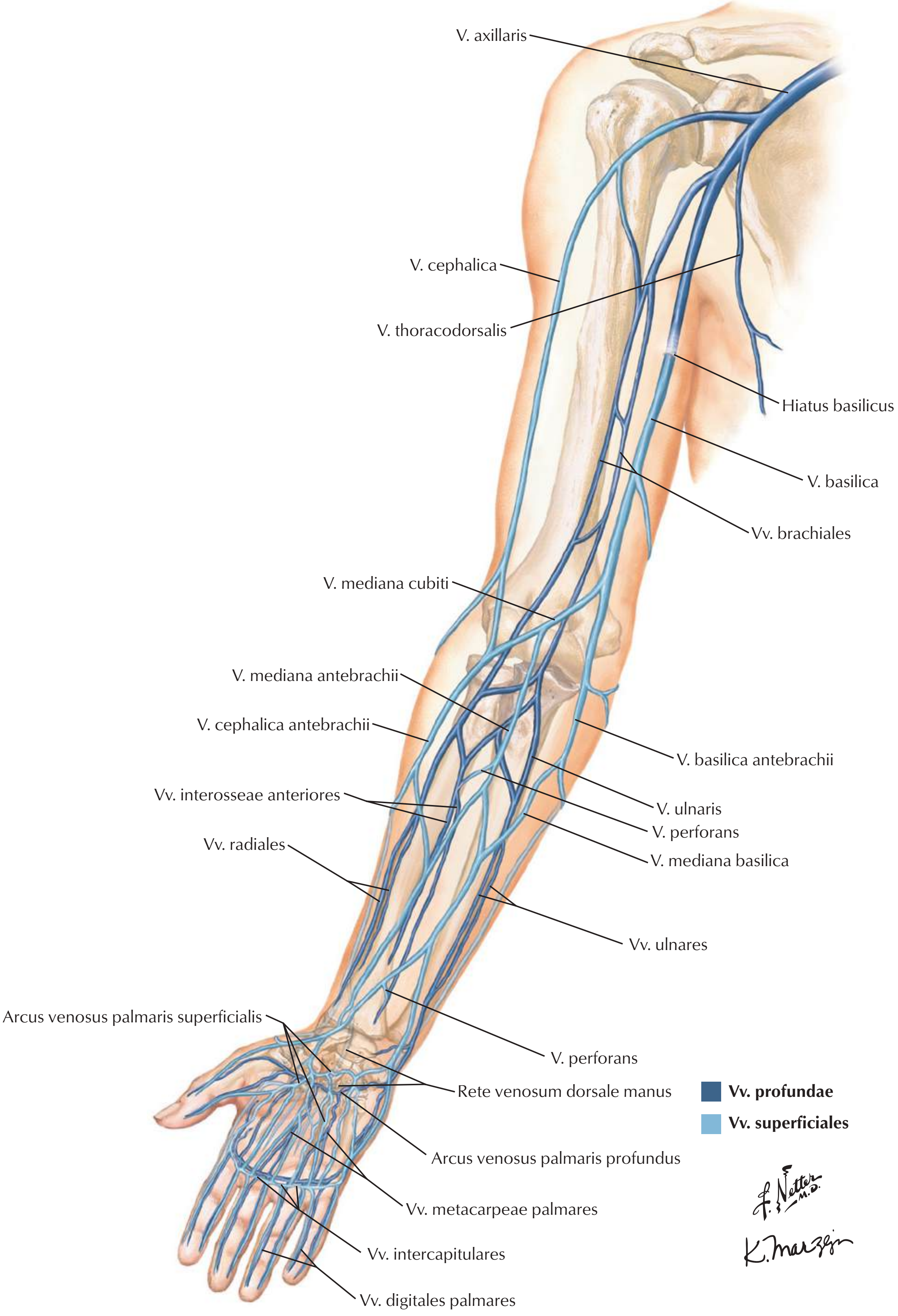
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Abductor brevis pollicis	Mm. manus	Retinaculum flexorium; Tubercula ossium scaphoidei and trapezii	Basis phalangis proximalis pollicis	N. medianus (R. recurrens)	R. palmaris superficialis a. radialis	Abducts thumb
Abductor digiti minimi	Mm. manus	Os pisiforme; Tendo flexoris ulnaris carpi	Medial side of basis phalangis proximalis digiti minimi	N. ulnaris (R. profundus)	R. palmaris profundus a. ulnaris	Abducts little finger
Abductor longus pollicis	Compartimentum posterius antebrachii	Facies posteriores ulnae, radii, and membranae interosseae	Basis ossis 1 metacarpi	N. radialis (N. interosseus posterior)	A. interossea posterior	Abducts and extends thumb at carpometacarpal joint
Adductor pollicis	Mm. manus	*Caput obliquum*: Bases ossium 2 and 3 metacarpi; Os capitatum and adjacent bones *Caput transversum*: Facies anterior ossis 3 metacarpi	Basis phalangis proximalis pollicis.	N. ulnaris (R. profundus)	Arcus palmaris profundus	Adducts thumb
M. anconeus	Mm. brachii	Facies posterior epicondyli lateralis humeri	Facies lateralis olecrani; Proximal facies posterior ulnae	N. radialis	A. profunda brachii	Assists triceps in extending elbow, abducts ulna in pronation
M. biceps brachii	Mm. brachii	*Caput longum*: Tuberculum supraglenoideum scapulae *Caput breve*: Proc. coracoideus scapulae	Tuberositas radii; Fascia antebrachii via aponeurosis bicipitalis	N. musculocutaneus	Rr. musculares a. brachialis	Flexes and supinates forearm at elbow
M. brachialis	Mm. brachii	Distal half of facies anterior humeri	Proc. coronoideus and tuberositas ulnae	Nn. musculocutaneus and radialis	A. recurrens radialis; Rr. musculares a. brachialis	Flexes forearm at elbow
M. brachioradialis	Compartimentum posterius antebrachii	Proximal 2/3 of crista supracondylarislateralis humeri	Distal end of facies lateralis radii	N. radialis	A. recurrens radialis	Weak flexion of forearm when forearm is midpronated
M. coracobrachialis	Mm. brachii	Proc. coracoideus scapulae	Middle third of facies anteromedialis humeri	N. musculocutaneus	Rr. musculares a. brachialis	Flexes and adducts arm at shoulder
M. deltoideus	Mm. omi	Lateral third of clavicula; Acromion; Spina scapulae	Tuberositas deltoidea humeri	N. axillaris	A. circumflexa posterior humeri; R. deltoideus a. thoracoacromialis	*Clavicular part*: flexes and medially rotates arm *Acromial part*: abducts arm beyond initial 15 degrees done by supraspinatus *Spinous part*: extends and laterally rotates arm
Extensor brevis pollicis	Compartimentum posterius antebrachii	Facies posteriores radii and membranae interosseae	Dorsal side of basis phalangis proximalis pollicis	N. radialis (N. interosseus posterior)	A. interossea posterior	Extends proximal phalanx of thumb at carpometacarpal joint

Variations in spinal nerve contributions to the innervation of muscles, their arterial supply, their attachments, and their actions are common themes in human anatomy. Therefore, expect differences between texts and realize that anatomic variation is normal.

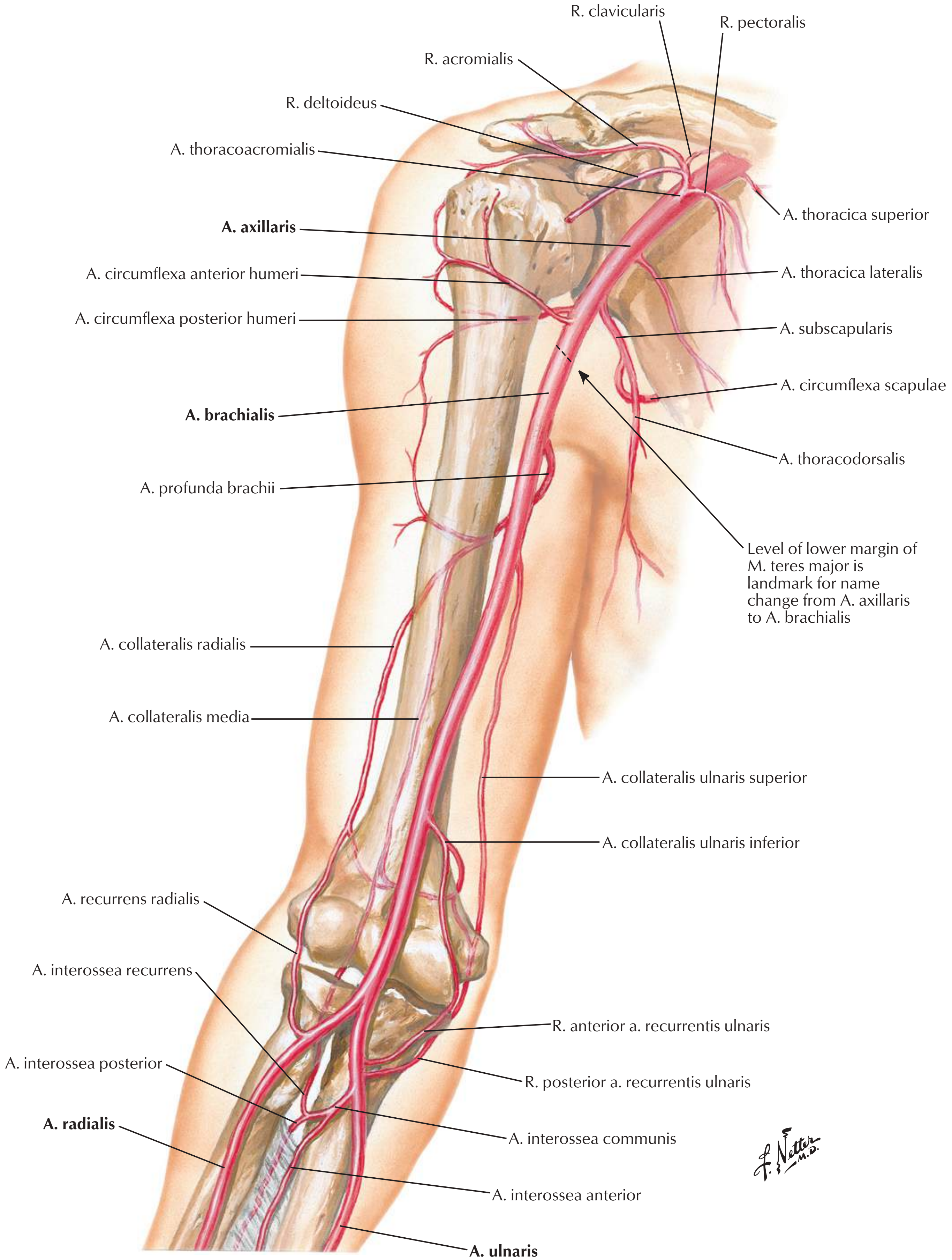
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Extensor digiti minimi	Compartimentum posterius antebrachii	Epicondylus lateralis humeri	Aponeurosis extensoria digiti minimi	N. radialis (N. interosseus posterior)	A. interossea posterior	Extends 5th digit
Extensor digitorum	Compartimentum posterius antebrachii	Epicondylus lateralis humeri	Aponeuroses extensoriae digitorum 2-5	N. radialis (N. interosseus posterior)	A. interossea posterior	Extends medial four digits, assists in wrist extension
Extensor indicis	Compartimentum posterius antebrachii	Facies posteriores ulnae and membranae interosseae	Aponeurosis extensoria indicis	N. radialis (N. interosseus posterior)	A. interossea posterior	Extends 2nd digit and helps extend hand at wrist
Extensor longus pollicis	Compartimentum posterius antebrachii	Facies posteriores ulnae (middle third) and membranae interosseae	Dorsal side of basis phalangis distalis pollicis	N. radialis (N. interosseus posterior)	A. interossea posterior	Extends distal phalanx of thumb at interphalangeal and metacarpophalangeal joints
Extensor radialis brevis carpi	Compartimentum posterius antebrachii	Epicondylus lateralis humeri	Basis ossis 3 metacarpi; and slip to os 2 metacarpi	N. radialis (R. profundus)	Aa. radialis and recurrens radialis	Extends and abducts hand at wrist
Extensor radialis longus carpi	Compartimentum posterius antebrachii	Distal third of crista supracondylaris lateralis humeri	Basis ossis 2 metacarpi; and slip to os 3 metacarpi	N. radialis	Aa. radialis and recurrens radialis	Extends and abducts hand at wrist
Extensor ulnaris carpi	Compartimentum posterius antebrachii	Epicondylus lateralis humeri; Margo posterior ulnae	Basis ossis 5 metacarpi	N. radialis (N. interosseus posterior)	A. interossea posterior	Extends and adducts hand at wrist
Flexor brevis pollicis	Mm. manus	Retinaculum flexorium; Tuberculum ossis trapezii	Lateral side of basis phalangis proximalis pollicis	N. medianus (R. recurrens)	R. palmaris superficialis a. radialis	Flexes proximal phalanx of thumb
Flexor digiti minimi	Mm. manus	Retinaculum flexorium; Hamulus ossis hamati	Medial side of basis phalangis proximalis digiti minimi	N. ulnaris (R. profundus)	R. palmaris profundus a. ulnaris	Flexes proximal phalanx of little finger
Flexor longus pollicis	Compartimentum anterius antebrachii	Facies anterior radii; Membrana interossea	Palmar side of basis phalangis distalis pollicis	N. medianus (N. interosseus anterior)	A. interossea anterior	Flexes phalangeal bones of thumb
Flexor profundus digitorum	Compartimentum anterius antebrachii	Facies medialis and anterior ulnae (proximal 3/4); Membrana interossea	Palmar sides of bases phalangium distalium digitorum 2-5	*Pars medialis*: N. ulnaris *Pars lateralis*: N. medianus	A. interossea anterior; Rr. musculares a. ulnaris	Flexes distal phalangeal bones of medial four digits, assists with flexion of hand at wrist
Flexor radialis carpi	Compartimentum anterius antebrachii	Epicondylus medialis humeri	Basis ossis 2 metacarpi	N. medianus	A. radialis	Flexes and abducts hand at wrist
Flexor superficialis digitorum	Compartimentum anterius antebrachii	*Caput humeroulnare*: Epicondylus medialis humeri; Proc. coronoideus ulnae; Lig. collaterale ulnare cubiti *Caput radiale*: Superior half of facies anterior radii	Corpora phalangium mediorum digitorum 2-5	N. medianus	Aa. ulnaris and radialis	Flexes middle and proximal phalangeal bones of medial four digits, flexes hand at wrist
Flexor ulnaris carpi	Compartimentum anterius antebrachii	*Caput superficiale*: Epicondylus medialis humeri *Caput profundum*: Olecranon; Margo posterior ulnae	Os pisiforme; Hamulus ossis hamati; Basis ossis 5 metacarpi	N. ulnaris	R. posterior a. recurrentis ulnaris	Flexes and adducts hand at wrist
M. infraspinatus	Mm. omi	Fossa infraspinata scapulae; Fascia profunda	Tuberculum majus humeri	N. suprascapularis	A. suprascapularis	Lateral rotation of arm
Mm. interossei dorsales	Mm. manus	Facing sides of adjacent ossa metacarpi	Bases phalangium proximalium; Aponeuroses extensoriae digitorum 2–4	N. ulnaris (R. profundus)	Arcus palmaris profundus	Abduct digits; flex digits at metacarpophalangeal joint and extend interphalangeal joints

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Mm. interossei palmares	Mm. manus	Palmar sides of ossa 2, 4, and 5 metacarpi	Bases phalangium proximalium and aponeuroses extensoriae digitorum 2, 4, and 5	N. ulnaris (R. profundus)	Arcus palmaris profundus	Adducts digits; flexes digits and extends interphalangeal joints
M. latissimus dorsi	Mm. superficiales dorsi	Procc. spinosi vertebrarum T7–L5; Fascia thoracolumbalis; Crista iliaca; Costae 10-12	Sulcus intertubercularis humeri	N. thoracodorsalis	A. thoracodorsalis; Rr. perforantes dorsales aa. intercostalium posteriorum 9-11, subcostalis, and lumbalium 1-3	Extends, adducts, and medially rotates humerus
Levator scapulae	Mm. superficiales dorsi	Tubercula posteriora [procc. transversorum] vertebrarum C1–C4	Margo medialis scapulae from angulus superior to spina scapulae	Rr. anteriores nn. spinales C3–C4; N. dorsalis scapulae	Aa. dorsalis scapulae, transversa colli, and cervicalis ascendens	Elevates scapula medially, inferiorly rotates glenoid fossa (cavity)
Mm. lumbricales 1 and 2	Mm. manus	Lateral two tendines flexoris profundi digitorum	Lateral sides of aponeuroses extensoriae digitorum 2 and 3	N. medianus (Nn. digitales palmares)	Arcus palmares superficialis and profundus	Extend digits at interphalangeal joints, flex metacarpophalangeal joints
Mm. lumbricales 3 and 4	Mm. manus	Medial three tendines flexoris profundi digitorum	Lateral sides of aponeuroses extensoriae digitorum 4 and 5	N. ulnaris (R. profundus)	Arcus palmares superficialis and profundus	Extend digits at interphalangeal joints, flex metacarpophalangeal joints
M. opponens digiti minimi	Mm. manus	Retinaculum flexorium; Hamulus ossis hamati	Facies palmaris ossis 5 metacarpi	N. ulnaris (R. profundus)	R. palmaris profundus a. ulnaris	Draws 5th metacarpal anteriorly and rotates it to face thumb
M. opponens pollicis	Mm. manus	Retinaculum flexorium; Tuberculum ossis trapezii	Facies lateralis ossis 1 metacarpi	N. medianus (R. recurrens)	R. palmaris superficialis a. radialis	Draws 1st metacarpal forward and rotates it medially
M. palmaris brevis	Mm. manus	Aponeurosis palmaris; Retinaculum flexorium	Cutis marginis medialis palmae	N. ulnaris (R. superficialis)	Arcus palmaris superficialis	Deepens hollow of hand, assists grip
M. palmaris longus	Compartimentum anterius antebrachii	Epicondylus medialis humeri	Distal half of retinaculum flexorium; Aponeurosis palmaris	N. medianus	R. posterior a. recurrentis ulnaris	Flexes hand at wrist and tenses palmar aponeurosis
M. pectoralis major	Mm. pectorales	Pars medialis claviculae; Sternum to 7th rib; Cartilagines costarum verarum; Aponeurosis m. obliqui externi abdominis	Labium laterale sulci intertubercularis (Crista tuberculi majoris) humeri	Nn. pectorales medialis and lateralis	R. pectoralis a. thoracoacromialis; Rr. perforantes a. thoracicae internae	Flexes, adducts, and medially rotates arm
M. pectoralis minor	Mm. pectorales	Facies externae marginum superiorum costarum 3–5	Proc. coracoideus scapulae	N. pectoralis medialis	R. pectoralis a. thoracoacromialis; Aa. intercostales laterales	Protracts and depresses scapula
Pronator quadratus	Compartimentum anterius antebrachii	Distal fourth of facies anterior ulnae	Distal fourth of facies anterior radii	N. medianus (N. interosseus anterior)	A. interossea anterior	Pronates forearm
Pronator teres	Compartimentum anterius antebrachii	*Caput humerale*: Epicondylus medialis humeri *Caput ulnare*: Proc. coronoideus ulnae	Midway along facies lateralis radii	N. medianus	R. anterior a. recurrentis ulnaris	Pronates forearm and weakly flexes elbow
M. rhomboideus major	Mm. superficiales dorsi	Procc. spinosi vertebrarum T2–T5	Margo medialis scapulae below base of spina scapulae	N. dorsalis scapulae	A. dorsalis scapulae OR R. profundus a. transversae colli; Rr. perforantes dorsales aa. intercostalium posteriorum 1-5 or 6	Retracts scapula superiorly and medially

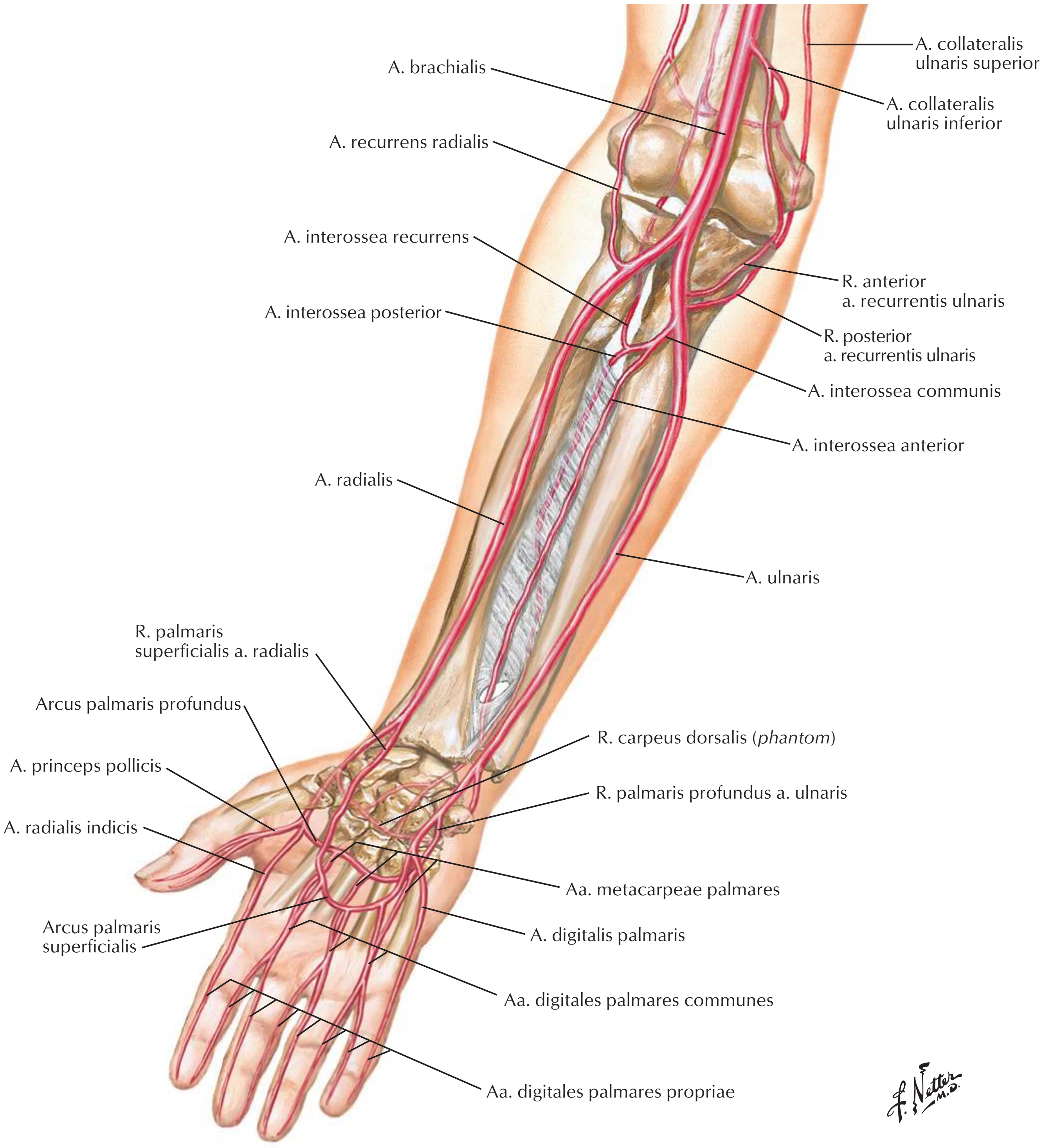
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. rhomboideus minor	Mm. superficiales dorsi	Lig. nuchae; Procc. spinosi vertebrarum C7 and T1	Margo medialis scapulae at spina scapulae	N. dorsalis scapulae	A. dorsalis scapulae OR R. profundus a. transversae colli; Rr. perforantes dorsales aa. intercostalium posteriorum 1-5 or 6	Retracts scapula superiorly and medially
M. serratus anterior	Mm. pectorales	Facies laterales costarum 1-8 or 9	Facies costalis marginis medialis scapulae	N. thoracicus longus	A. thoracica lateralis	Protracts and rotates scapula and holds it against thoracic wall
M. subclavius	Mm. pectorales	Facies superiores costae 1 and cartilaginis costalis 1	Middle third of facies inferior claviculae	N. subclavius	R. clavicularis a. thoracoacromialis	Anchors and depresses clavicle
M. subscapularis	Mm. omi	Fossa subscapularis	Tuberculum minus humeri	Nn. subscapulares superior and inferior	Aa. subscapularis and thoracica lateralis	Medially rotates and adducts arm, helps hold humeral head in glenoid fossa
Supinator	Compartimentum posterius antebrachii	Epicondylus lateralis humeri; Ligg. collaterale radiale cubiti and anulare radii; Crista supinatorius ulnae	Facies lateralis, posterior, and anterior radii (proximal third)	N. radialis (R. profundus)	Aa. recurrens radialis and interossea posterior	Supinates forearm
M. supraspinatus	Mm. omi	Fossa supraspinata scapulae; Fascia profunda	Tuberculum majus humeri	N. suprascapularis	A. suprascapularis	Initiates arm abduction
M. teres major	Mm. omi	Facies posterior anguli inferioris scapulae	Labium mediale sulci intertubercularis (Crista tuberculi minoris) humeri	N. subscapularis inferior	A. circumflexa scapulae	Adducts and medially rotates arm
M. teres minor	Mm. omi	Upper 2/3 of facies posterior marginis lateralis scapulae	Inferior facet of tuberculum majus humeri	N. axillaris	A. circumflexa scapulae	Laterally rotates arm
M. trapezius	Mm. superficiales dorsi	Linea nuchalis superior; Protuberantia occipitalis externa; Lig. nuchae; Procc. spinosi vertebrarum C7–T12	Lateral third of clavicula; Acromion; Spina scapulae	N. accessorius (N. cranialis XI)	A. transversa colli; Rr. perforantes dorsales aa. intercostalium posteriorum	Elevates, retracts, and rotates scapula; lower fibers depress scapula
M. triceps brachii	Mm. brachii	*Caput longum*: Tuberculum infraglenoideum scapulae *Caput laterale*: upper half of facies posterior humeri *Caput mediale*: Distal 2/3 of facies posterior humeri	Facies posterior olecrani ulnae	N. radialis	A. profunda brachii	Extends forearm at elbow; long head stabilizes head of abducted humerus and extends and adducts arm


V. axillaris
V. cephalica
V. thoracodorsalis
Hiatus basilicus
V. basilica
Vv. brachiales
V. mediana cubiti
V. mediana antebrachii
V. cephalica antebrachii
V. basilica antebrachii
Vv. interosseae anteriores
V. ulnaris
V. perforans
Vv. radiales
V. mediana basilica
Vv. ulnares
Arcus venosus palmaris superficialis
V. perforans
Rete venosum dorsale manus
Arcus venosus palmaris profundus
Vv. metacarpeae palmares
Vv. intercapitulares
Vv. digitales palmares
Vv. profundae
Vv. superficiales
F. Netter M.D.
K. Marzejon

Arteries of Arm and Proximal Forearm

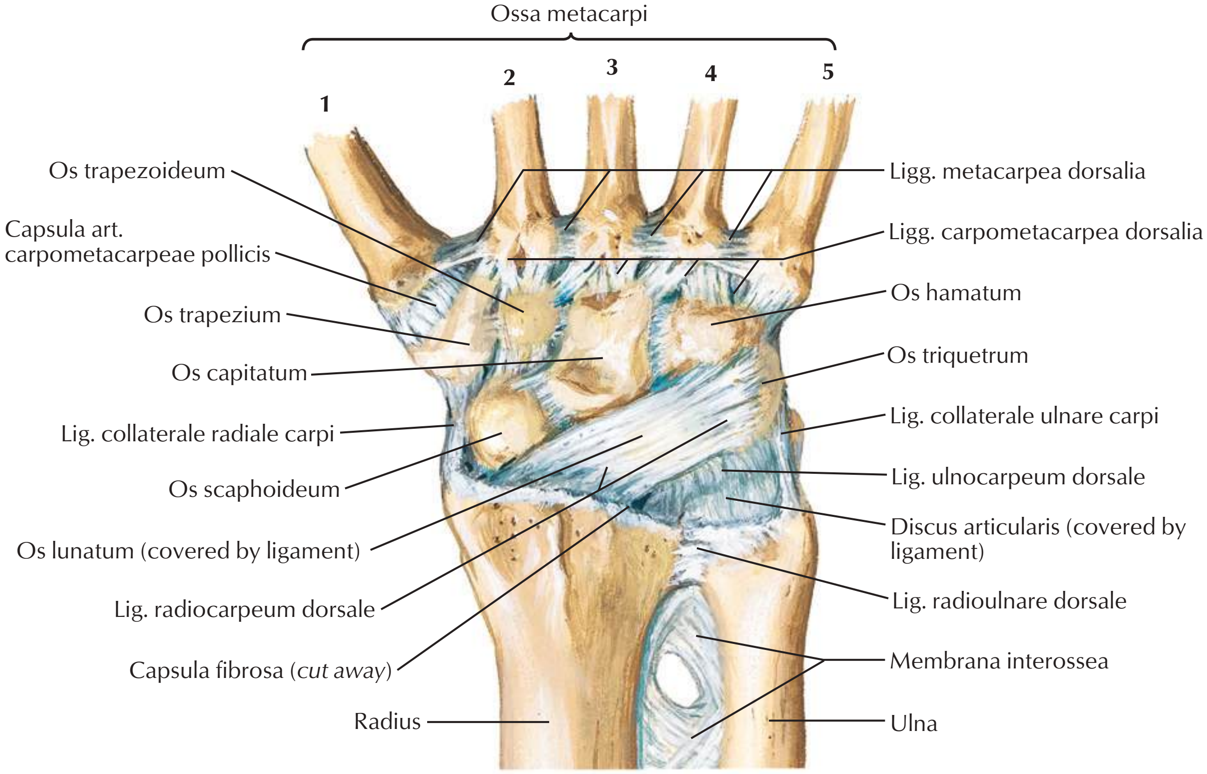


R. clavicularis
R. pectoralis
R. acromialis
R. deltoideus
A. thoracoacromialis
A. thoracica superior
A. axillaris
A. thoracica lateralis
A. circumflexa anterior humeri
A. circumflexa posterior humeri
A. subscapularis
A. circumflexa scapulae
A. brachialis
A. thoracodorsalis
A. profunda brachii
Level of lower margin of M. teres major is landmark for name change from A. axillaris to A. brachialis
A. collateralis radialis
A. collateralis media
A. collateralis ulnaris superior
A. collateralis ulnaris inferior
A. recurrens radialis
A. interossea recurrens
R. anterior a. recurrentis ulnaris
A. interossea posterior
R. posterior a. recurrentis ulnaris
A. radialis
A. interossea communis
A. interossea anterior
A. ulnaris

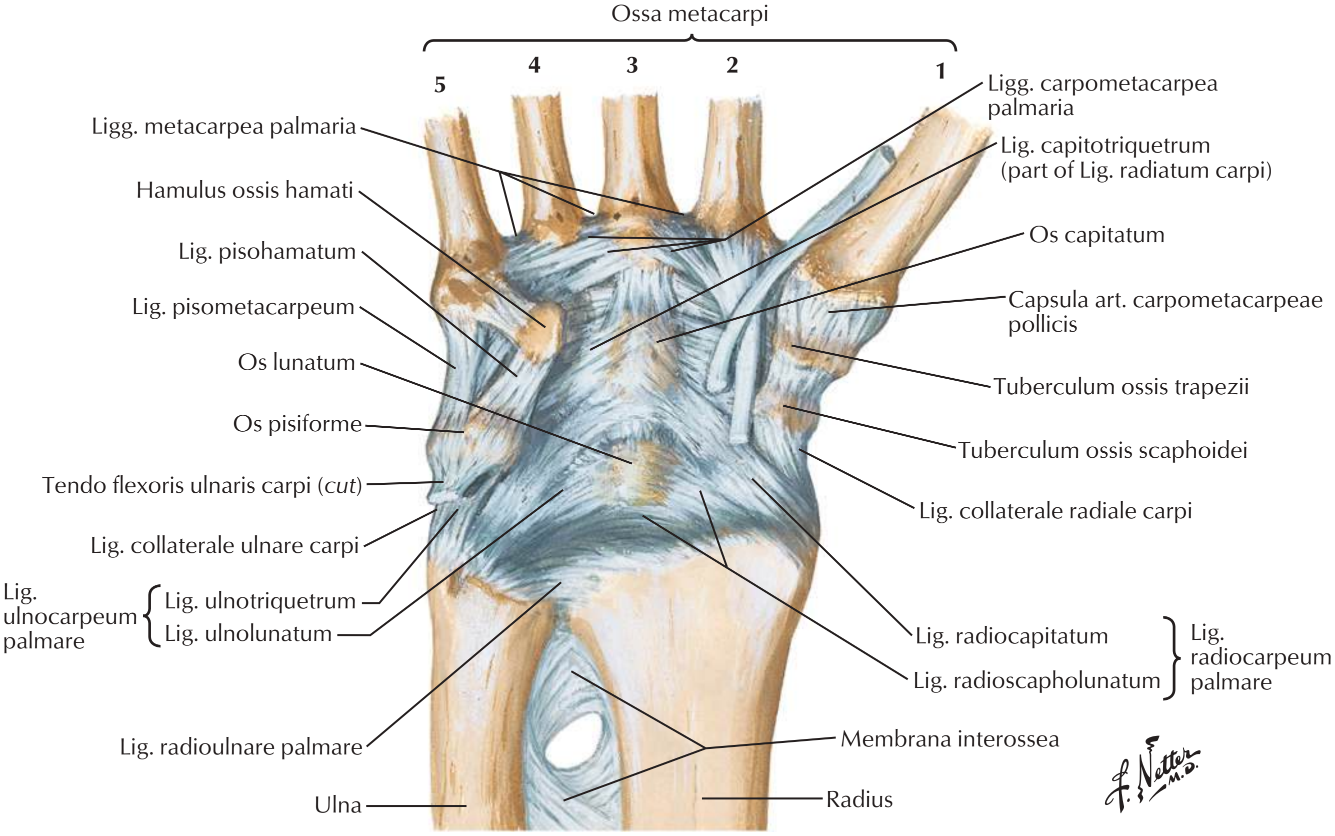

A. brachialis
A. recurrens radialis
A. interossea recurrens
A. interossea posterior
A. radialis
R. palmaris superficialis a. radialis
Arcus palmaris profundus
A. princeps pollicis
A. radialis indicis
Arcus palmaris superficialis
A. collateralis ulnaris superior
A. collateralis ulnaris inferior
R. anterior a. recurrentis ulnaris
R. posterior a. recurrentis ulnaris
A. interossea communis
A. interossea anterior
A. ulnaris
R. carpeus dorsalis (phantom)
R. palmaris profundus a. ulnaris
Aa. metacarpeae palmares
A. digitalis palmaris
Aa. digitales palmares communes
Aa. digitales palmares propriae

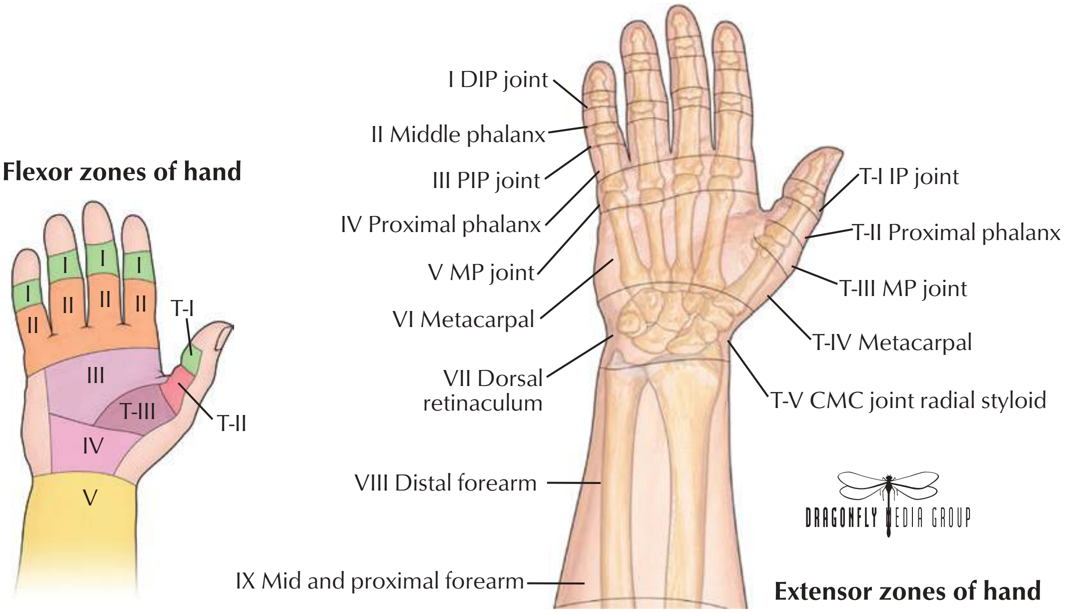
Ligaments of Wrist

Posterior (dorsal) view


Ossa metacarpi
1
2
3
4
5
Os trapezoideum
Capsula art. carpometacarpeae pollicis
Os trapezium
Os capitatum
Lig. collaterale radiale carpi
Os scaphoideum
Os lunatum (covered by ligament)
Lig. radiocarpeum dorsale
Capsula fibrosa (*cut away*)
Radius
Ligg. metacarpea dorsalia
Ligg. carpometacarpea dorsalia
Os hamatum
Os triquetrum
Lig. collaterale ulnare carpi
Lig. ulnocarpeum dorsale
Discus articularis (covered by ligament)
Lig. radioulnare dorsale
Membrana interossea
Ulna

Retinaculum flexorium removed: palmar view


Ossa metacarpi
5
4
3
2
1
Ligg. metacarpea palmaria
Hamulus ossis hamati
Lig. pisohamatum
Lig. pisometacarpeum
Os lunatum
Os pisiforme
Tendo flexoris ulnaris carpi (*cut*)
Lig. collaterale ulnare carpi
Lig. ulnocarpeum palmare
Lig. ulnotriquetrum
Lig. ulnolunatum
Lig. radioulnare palmare
Ulna
Ligg. carpometacarpea palmaria
Lig. capitotriquetrum (part of Lig. radiatum carpi)
Os capitatum
Capsula art. carpometacarpeae pollicis
Tuberculum ossis trapezii
Tuberculum ossis scaphoidei
Lig. collaterale radiale carpi
Lig. radiocapitatum
Lig. radioscapholunatum
Lig. radiocarpeum palmare
Membrana interossea
Radius



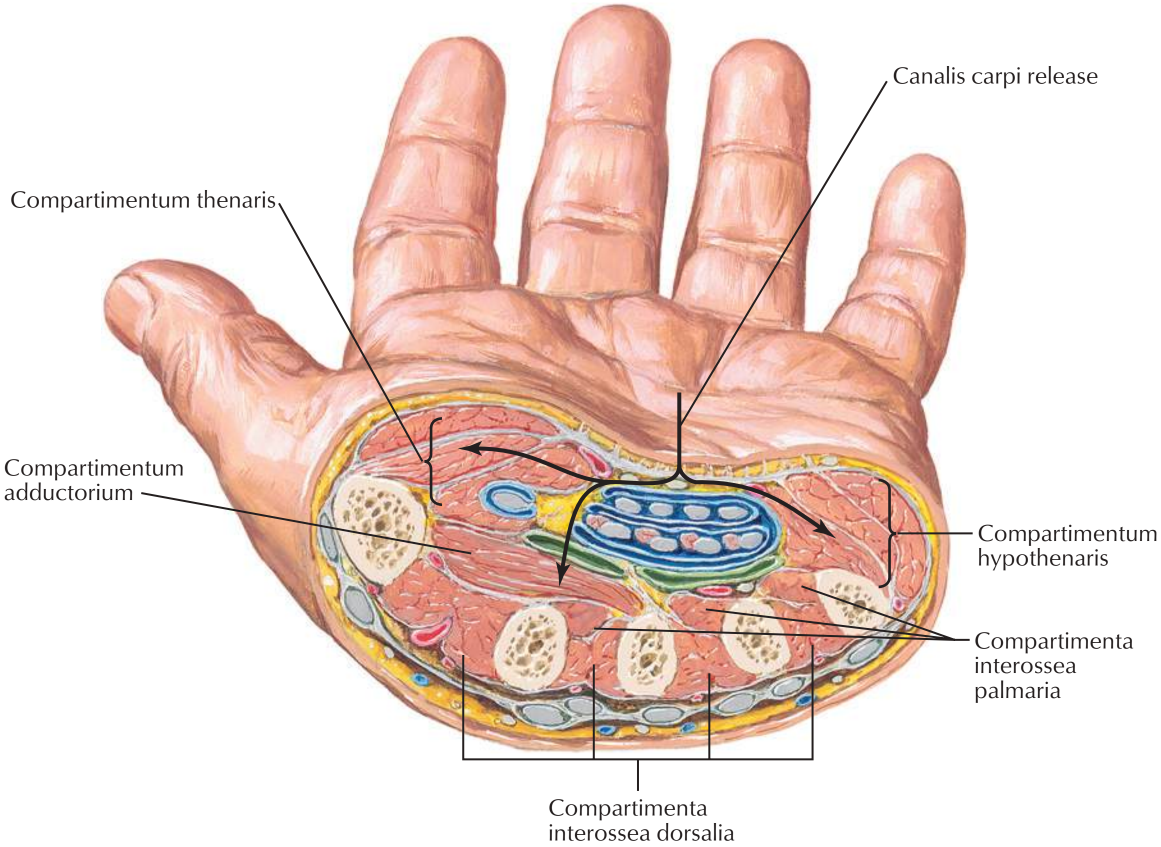
Flexor zones of hand

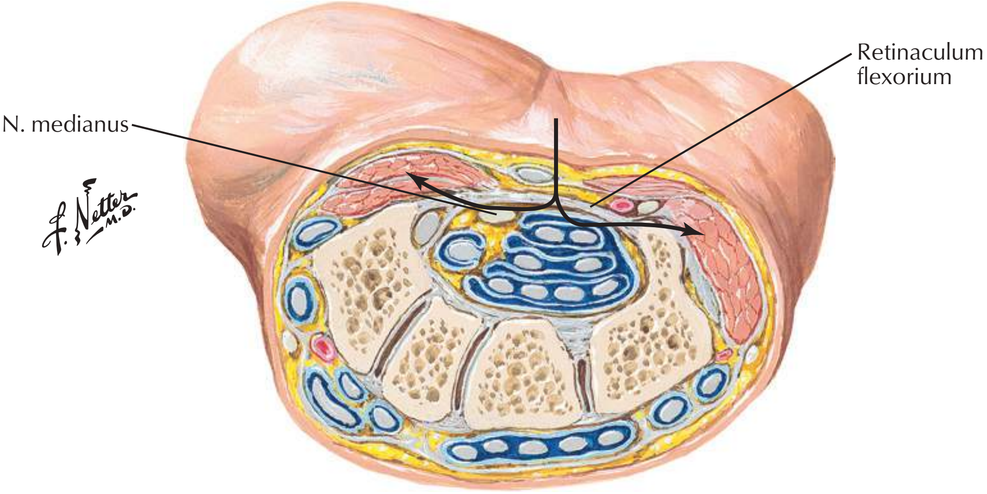
I
I
I
I
II
II
II
II
T-I
III
T-III
T-II
IV
V

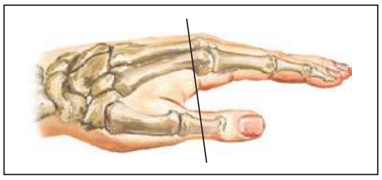
Extensor zones of hand

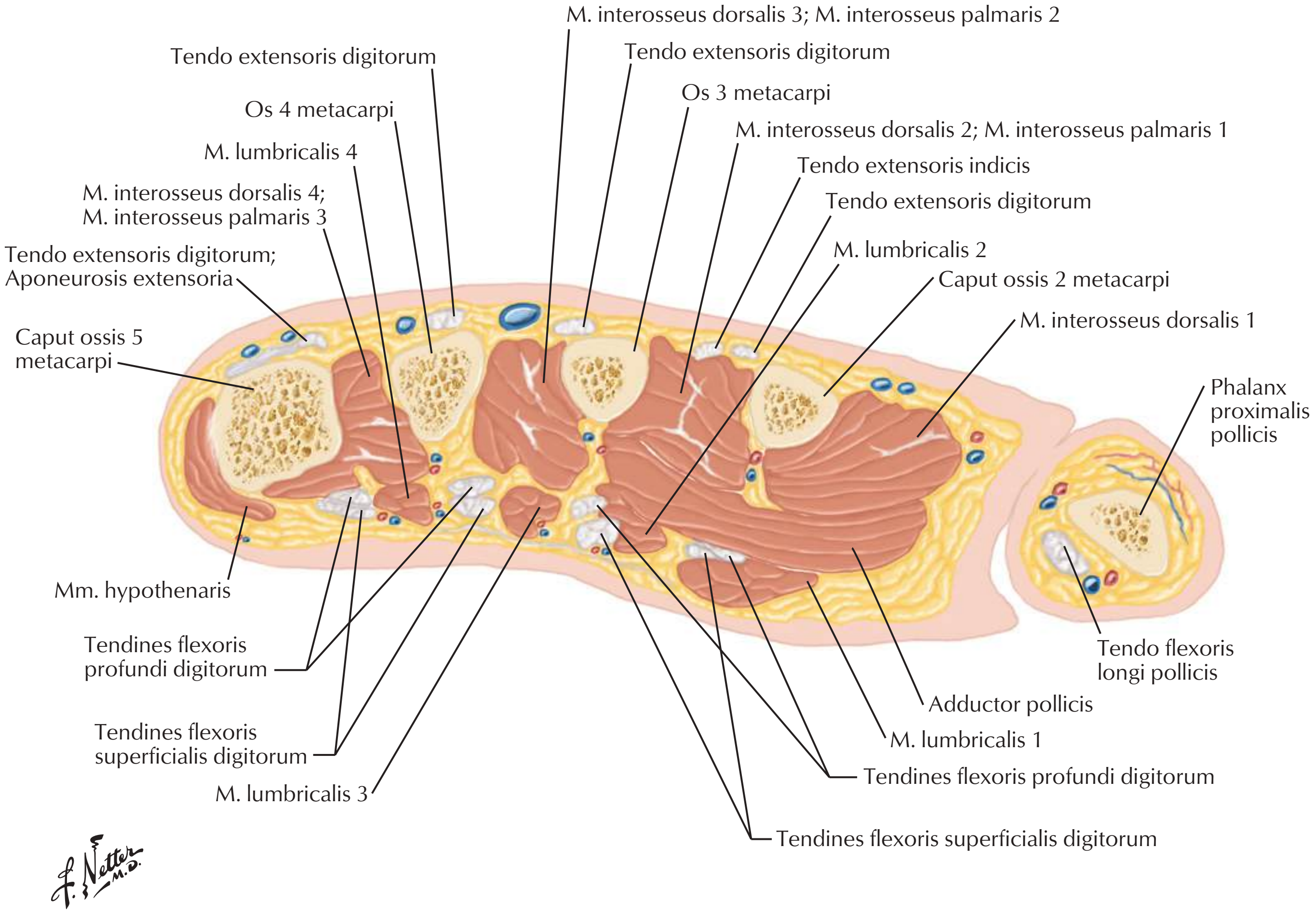
I DIP joint
II Middle phalanx
III PIP joint
IV Proximal phalanx
V MP joint
VI Metacarpal
VII Dorsal retinaculum
VIII Distal forearm
IX Mid and proximal forearm
T-I IP joint
T-II Proximal phalanx
T-III MP joint
T-IV Metacarpal
T-V CMC joint radial styloid

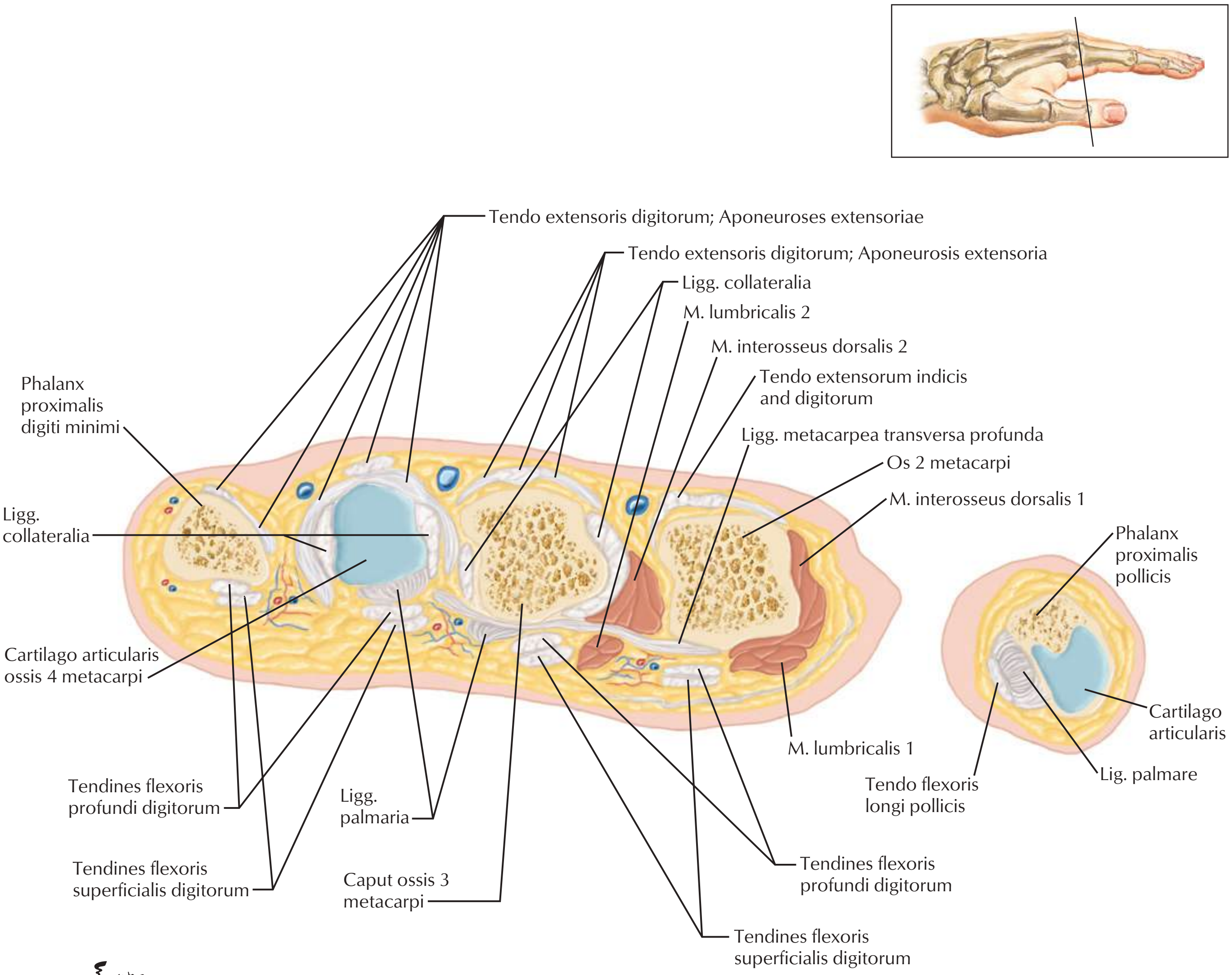
I	FDS insertion
II	Flexor sheath
III	Lumbrical origin
IV	Carpal tunnel
V	Distal forearm
T-I	Distal to IP joint
T-II	Thumb MP joint to IP
T-III	Thenar eminence


Canalis carpi release
Compartimentum thenaris
Compartimentum adductorium
Compartimentum hypothenaris
Compartimenta interossea palmaria
Compartimenta interossea dorsalia


Retinaculum flexorium
N. medianus




M. interosseus dorsalis 3; M. interosseus palmaris 2
Tendo extensoris digitorum
Tendo extensoris digitorum
Os 3 metacarpi
Os 4 metacarpi
M. interosseus dorsalis 2; M. interosseus palmaris 1
M. lumbricalis 4
Tendo extensoris indicis
M. interosseus dorsalis 4;
M. interosseus palmaris 3
Tendo extensoris digitorum
Tendo extensoris digitorum;
Aponeurosis extensoria
M. lumbricalis 2
Caput ossis 2 metacarpi
M. interosseus dorsalis 1
Caput ossis 5
metacarpi
Phalanx
proximalis
pollicis
Mm. hypothenaris
Tendines flexoris
profundi digitorum
Tendo flexoris
longi pollicis
Adductor pollicis
Tendines flexoris
superficialis digitorum
M. lumbricalis 1
Tendines flexoris profundi digitorum
M. lumbricalis 3
Tendines flexoris superficialis digitorum


Tendo extensoris digitorum; Aponeuroses extensoriae
Tendo extensoris digitorum; Aponeurosis extensoria
Ligg. collateralia
M. lumbricalis 2
M. interosseus dorsalis 2
Tendo extensorum indicis and digitorum
Ligg. metacarpea transversa profunda
Os 2 metacarpi
M. interosseus dorsalis 1
Phalanx proximalis digiti minimi
Ligg. collateralia
Cartilago articularis ossis 4 metacarpi
Phalanx proximalis pollicis
Cartilago articularis
Lig. palmare
M. lumbricalis 1
Tendo flexoris longi pollicis
Tendines flexoris profundi digitorum
Ligg. palmaria
Tendines flexoris superficialis digitorum
Caput ossis 3 metacarpi
Tendines flexoris profundi digitorum
Tendines flexoris superficialis digitorum

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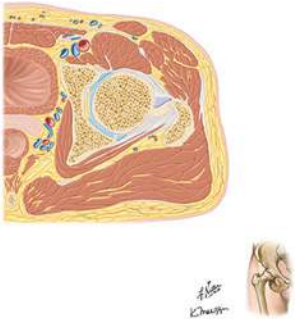
LOWER LIMB 8

Surface Anatomy 471
Cutaneous Anatomy 472-475
Hip and Thigh 476-496
Knee 497-503
Leg 504-514
Ankle and Foot 515-528
Neurovasculature 529-533
Regional Imaging 534-535
Structures with High Clinical Significance Tables 8.1-8.2
Muscle Tables Tables 8.3-8.6
Electronic Bonus Plates BP107-BP117

ELECTRONIC BONUS PLATES

BP107 Veins of Lower Limb

BP108 Arteries of Thigh and Knee

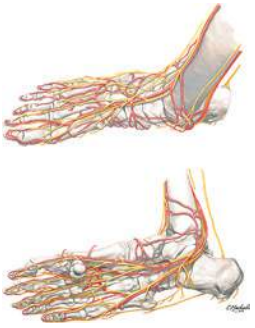

BP109 Cross-Sectional Anatomy of Hip: Axial View

BP110 Arteries of Knee and Foot

BP111 Leg: Serial Cross Sections

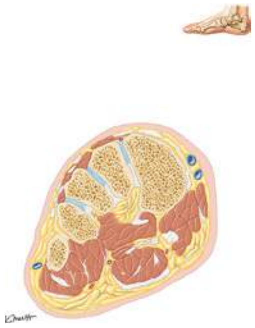
BP112 Osteology of Knee

BP113 Knee Radiograph: Lateral View


BP114 Anatomy of Foot: Nerves and Arteries

ELECTRONIC BONUS PLATES—*cont'd*

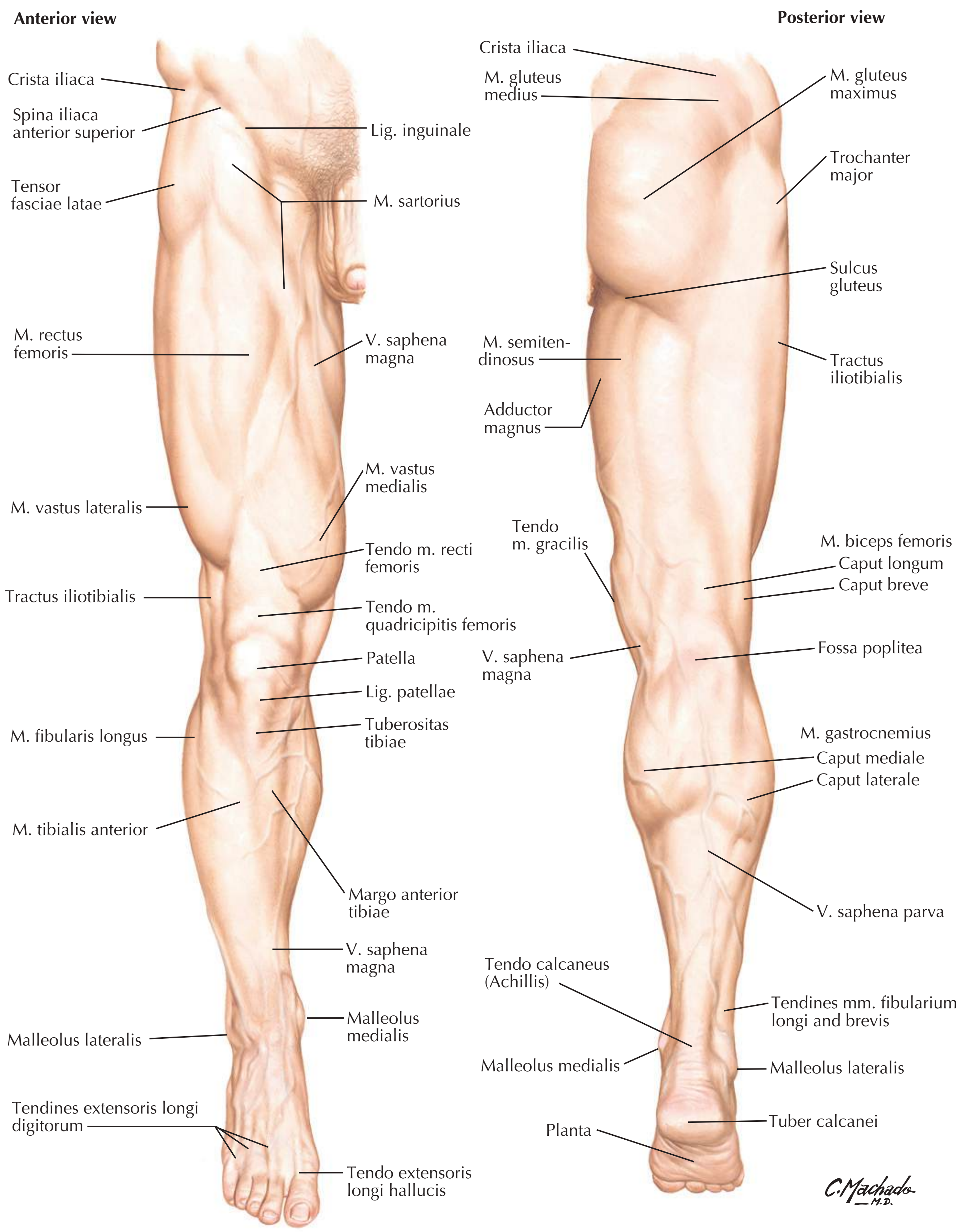
BP115 Cross-Sectional Anatomy of Ankle and Foot



BP116 Cross-Sectional Anatomy of Ankle and Foot (continued)

BP117 Anatomy of Toenail

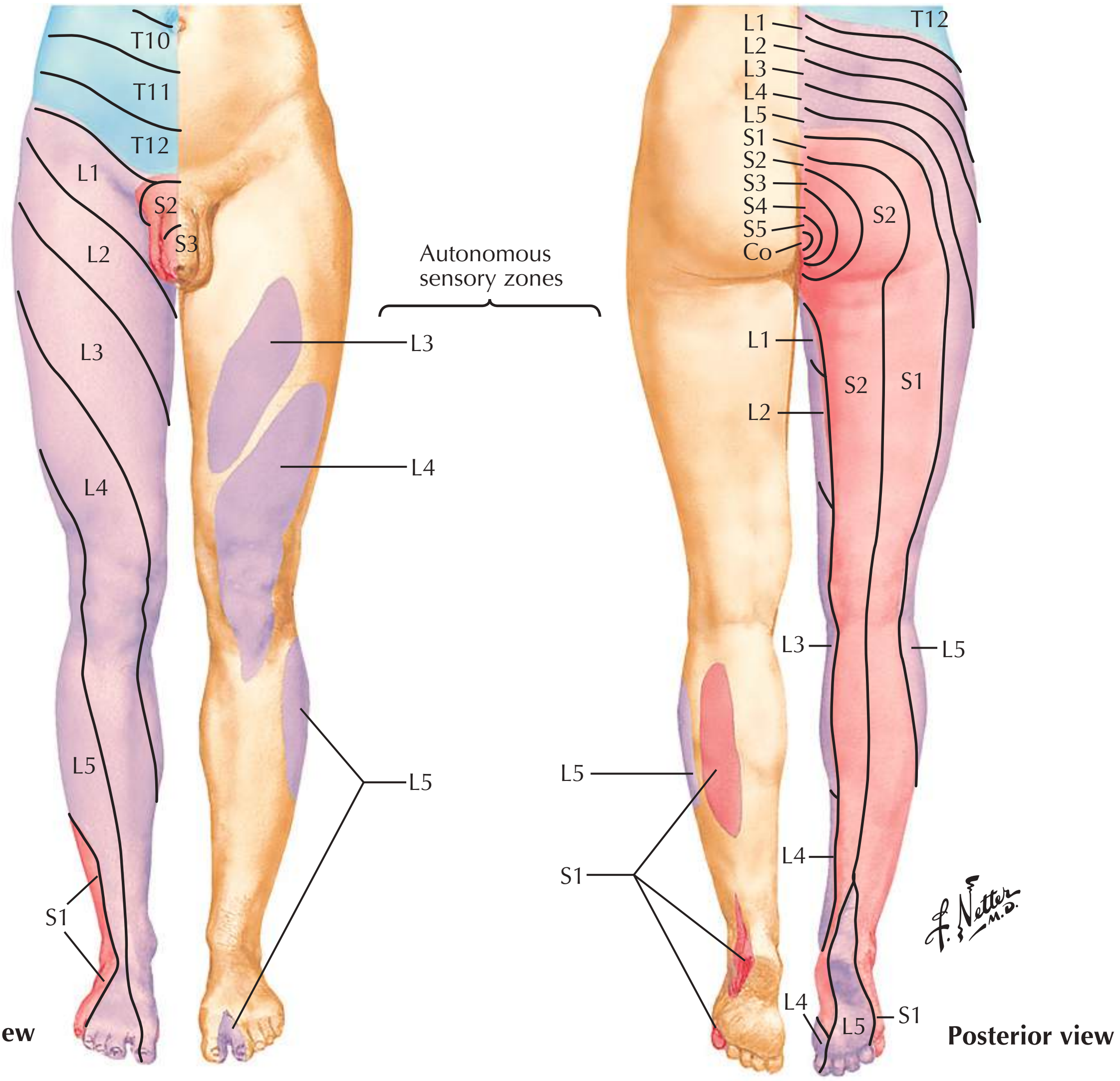
See also Plates 472-474


Anterior view
Crista iliaca
Spina iliaca anterior superior
Lig. inguinale
Tensor fasciae latae
M. sartorius
M. rectus femoris
V. saphena magna
M. vastus medialis
M. vastus lateralis
Tendo m. recti femoris
Tractus iliotibialis
Tendo m. quadricipitis femoris
Patella
Lig. patellae
M. fibularis longus
Tuberositas tibiae
M. tibialis anterior
Margo anterior tibiae
V. saphena magna
Malleolus medialis
Malleolus lateralis
Tendines extensoris longi digitorum
Tendo extensoris longi hallucis
Posterior view
Crista iliaca
M. gluteus medius
M. gluteus maximus
Trochanter major
Sulcus gluteus
M. semitendinosus
Tractus iliotibialis
Adductor magnus
Tendo m. gracilis
M. biceps femoris
Caput longum
Caput breve
V. saphena magna
Fossa poplitea
M. gastrocnemius
Caput mediale
Caput laterale
V. saphena parva
Tendo calcaneus (Achillis)
Tendines mm. fibularium longi and brevis
Malleolus medialis
Malleolus lateralis
Tuber calcanei
Planta
C.Machado M.D.

Dermatomes of Lower Limb and Segmental Nerve Function

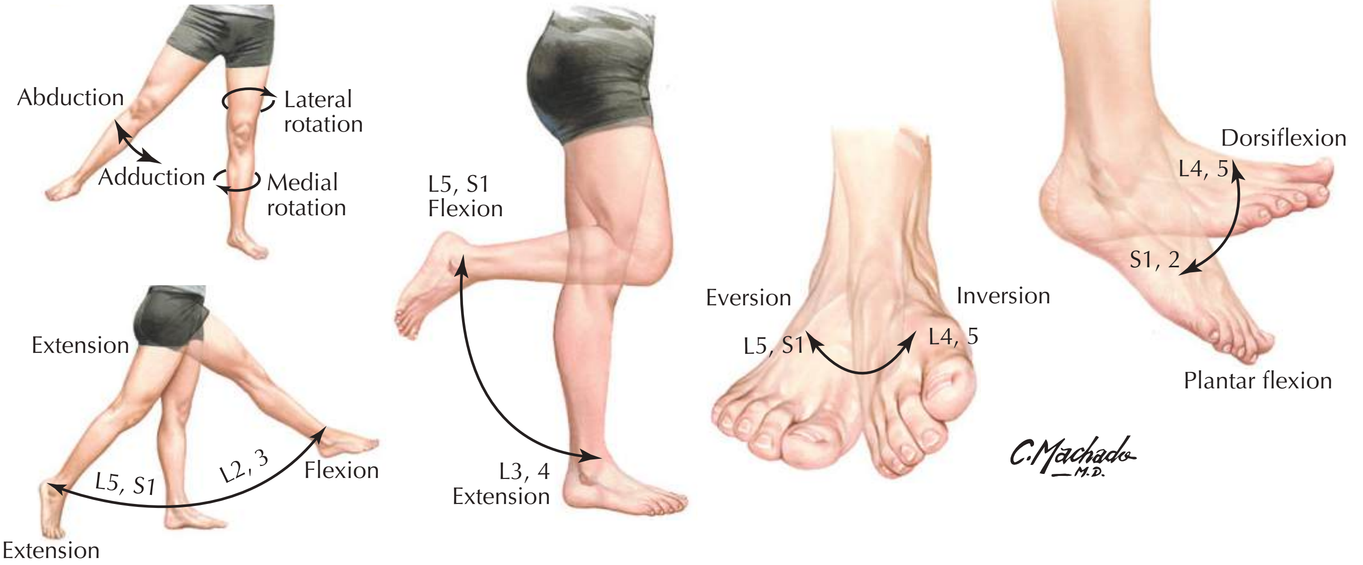
See also **Plate 171**

Schematic demarcation of dermatomes (according to Keegan and Garrett) shown as distinct segments. There is considerable overlap between any two adjacent dermatomes.



T10
T11
T12
L1
S2
S3
L2
L3
L4
L5
S1
Anterior view
Autonomous sensory zones
L3
L4
L5
L1
L2
L3
L4
L5
S1
S2
S3
S4
S5
Co
T12
S2
L1
S2
S1
L2
L3
L5
L5
S1
L4
L4
L5
S1
Posterior view

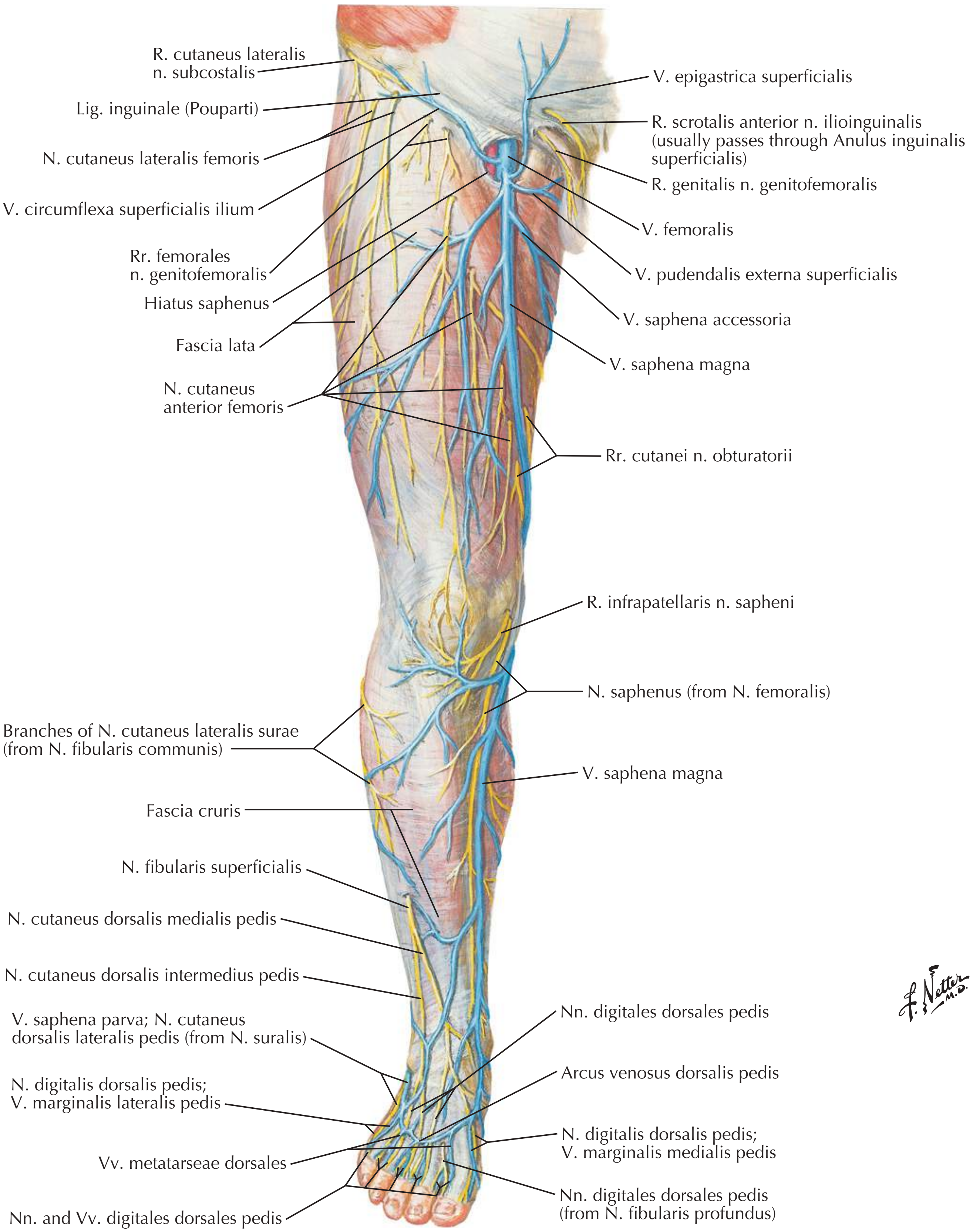
Segmental innervation of lower limb movements



Abduction
Lateral rotation
Adduction
Medial rotation
L5, S1
Flexion
Extension
L5, S1
L2, 3
Flexion
Extension
L3, 4
Extension
Eversion
L5, S1
Inversion
L4, 5
Dorsiflexion
L4, 5
S1, 2
Plantar flexion

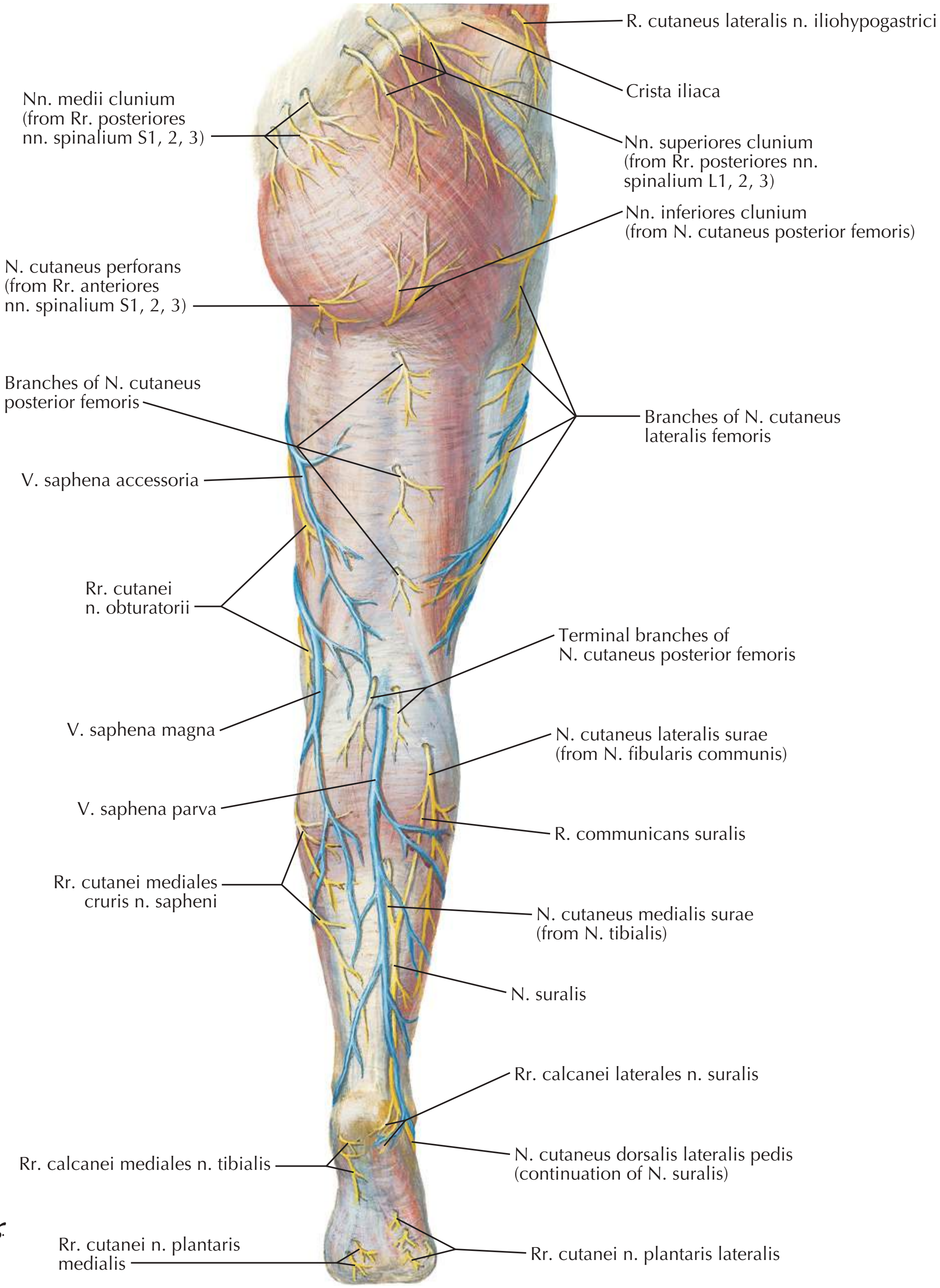
Superficial Nerves and Veins of Lower Limb: Anterior View

See also Plates 529, 530, 533


R. cutaneus lateralis n. subcostalis
Lig. inguinale (Pouparti)
N. cutaneus lateralis femoris
V. circumflexa superficialis ilium
Rr. femorales n. genitofemoralis
Hiatus saphenus
Fascia lata
N. cutaneus anterior femoris
V. epigastrica superficialis
R. scrotalis anterior n. ilioinguinalis (usually passes through Anulus inguinalis superficialis)
R. genitalis n. genitofemoralis
V. femoralis
V. pudendalis externa superficialis
V. saphena accessoria
V. saphena magna
Rr. cutanei n. obturatorii
R. infrapatellaris n. sapheni
N. saphenus (from N. femoralis)
Branches of N. cutaneus lateralis surae (from N. fibularis communis)
V. saphena magna
Fascia cruris
N. fibularis superficialis
N. cutaneus dorsalis medialis pedis
N. cutaneus dorsalis intermedius pedis
V. saphena parva; N. cutaneus dorsalis lateralis pedis (from N. suralis)
N. digitalis dorsalis pedis; V. marginalis lateralis pedis
Vv. metatarseae dorsales
Nn. and Vv. digitales dorsales pedis
Nn. digitales dorsales pedis
Arcus venosus dorsalis pedis
N. digitalis dorsalis pedis; V. marginalis medialis pedis
Nn. digitales dorsales pedis (from N. fibularis profundus)
F. Netter M.D.

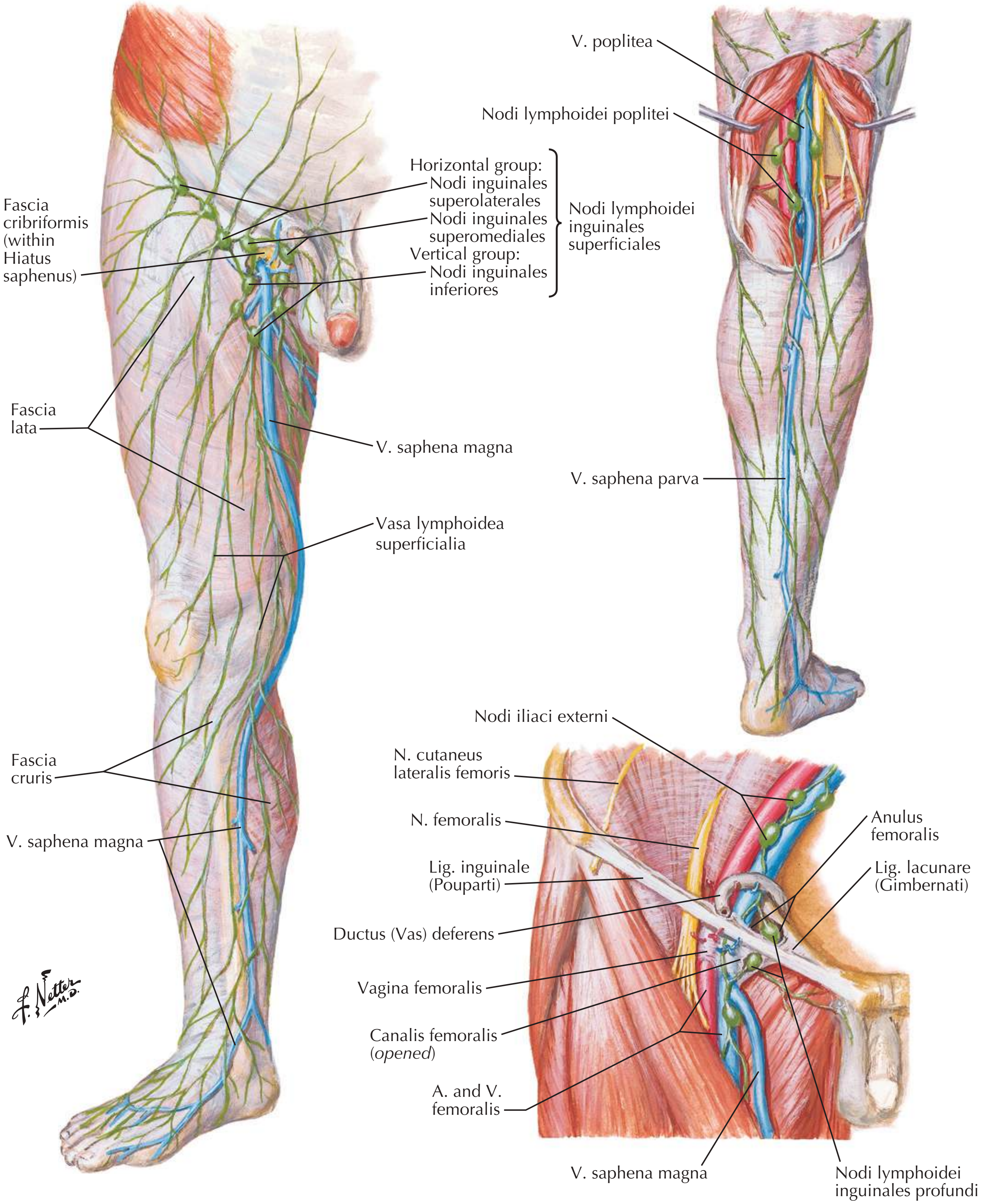
Superficial Nerves and Veins of Lower Limb: Posterior View

See also Plates 531, 532


R. cutaneus lateralis n. iliohypogastrici
Crista iliaca
Nn. medii clunium (from Rr. posteriores nn. spinalium S1, 2, 3)
Nn. superiores clunium (from Rr. posteriores nn. spinalium L1, 2, 3)
Nn. inferiores clunium (from N. cutaneus posterior femoris)
N. cutaneus perforans (from Rr. anteriores nn. spinalium S1, 2, 3)
Branches of N. cutaneus posterior femoris
Branches of N. cutaneus lateralis femoris
V. saphena accessoria
Rr. cutanei n. obturatorii
Terminal branches of N. cutaneus posterior femoris
V. saphena magna
N. cutaneus lateralis surae (from N. fibularis communis)
V. saphena parva
R. communicans suralis
Rr. cutanei mediales cruris n. sapheni
N. cutaneus medialis surae (from N. tibialis)
N. suralis
Rr. calcanei laterales n. suralis
Rr. calcanei mediales n. tibialis
N. cutaneus dorsalis lateralis pedis (continuation of N. suralis)
Rr. cutanei n. plantaris medialis
Rr. cutanei n. plantaris lateralis

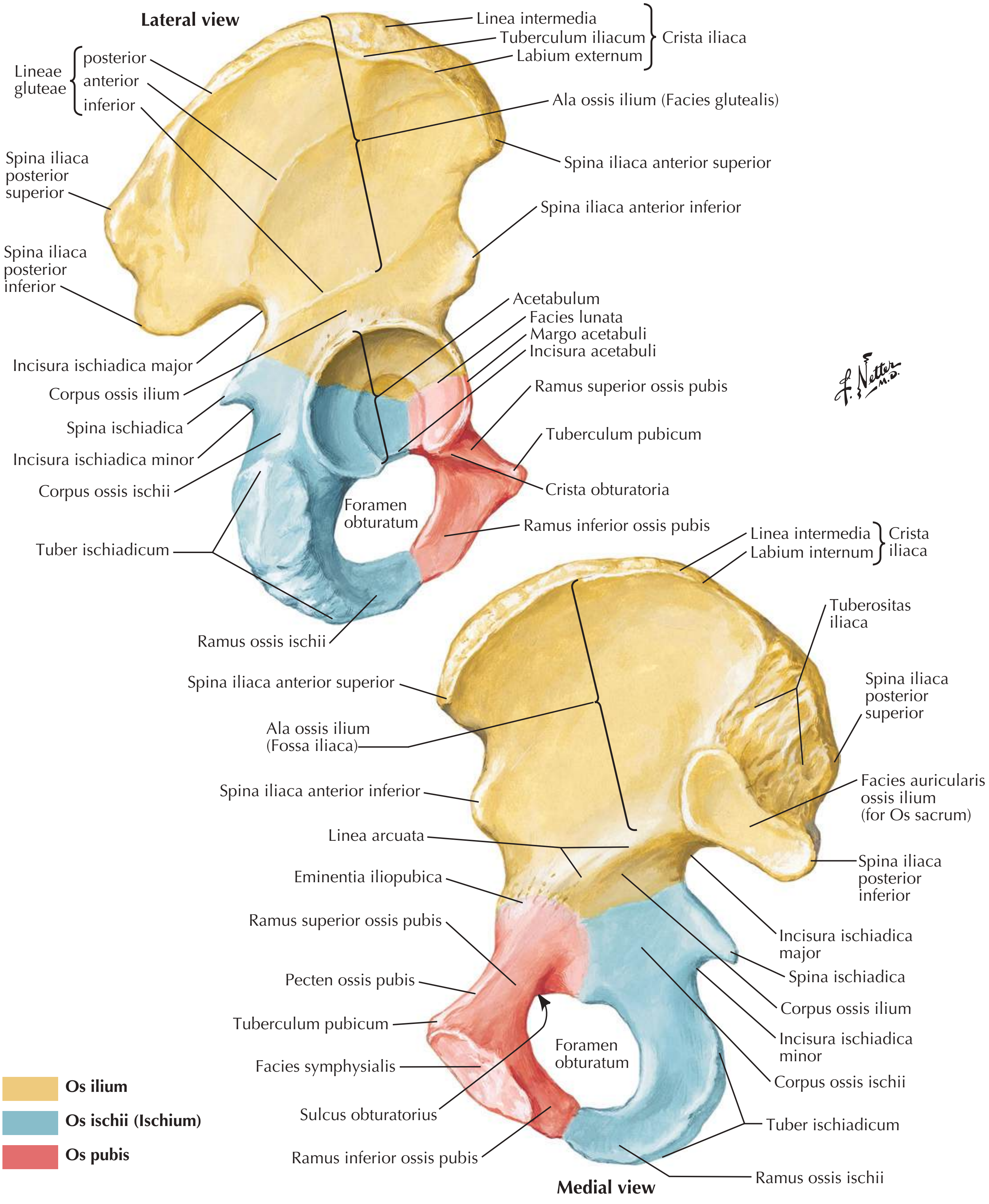
Lymph Vessels and Nodes of Lower Limb

See also Plates 389, 390


V. poplitea
Nodi lymphoidei poplitei
Horizontal group:
Nodi inguinales superolaterales
Nodi inguinales superomediales
Vertical group:
Nodi inguinales inferiores
Nodi lymphoidei inguinales superficiales
Fascia cribriformis (within Hiatus saphenus)
Fascia lata
V. saphena magna
V. saphena parva
Vasa lymphoidea superficialia
Fascia cruris
V. saphena magna
F. Netter M.D.
Nodi iliaci externi
N. cutaneus lateralis femoris
N. femoralis
Lig. inguinale (Pouparti)
Ductus (Vas) deferens
Vagina femoralis
Canalis femoralis (opened)
A. and V. femoralis
Anulus femoralis
Lig. lacunare (Gimbernati)
V. saphena magna
Nodi lymphoidei inguinales profundi

Coxal Bone

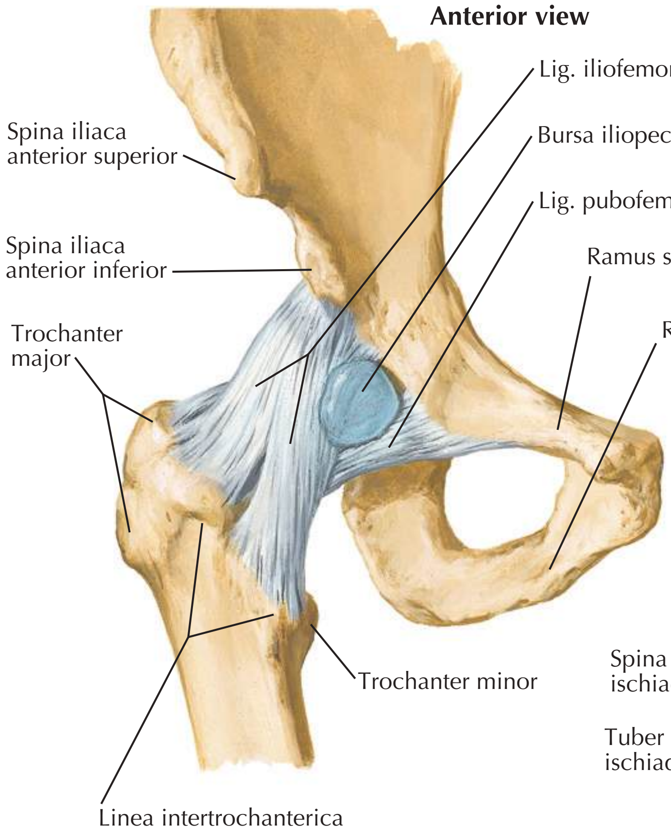
See also Plates 250, 337, 338

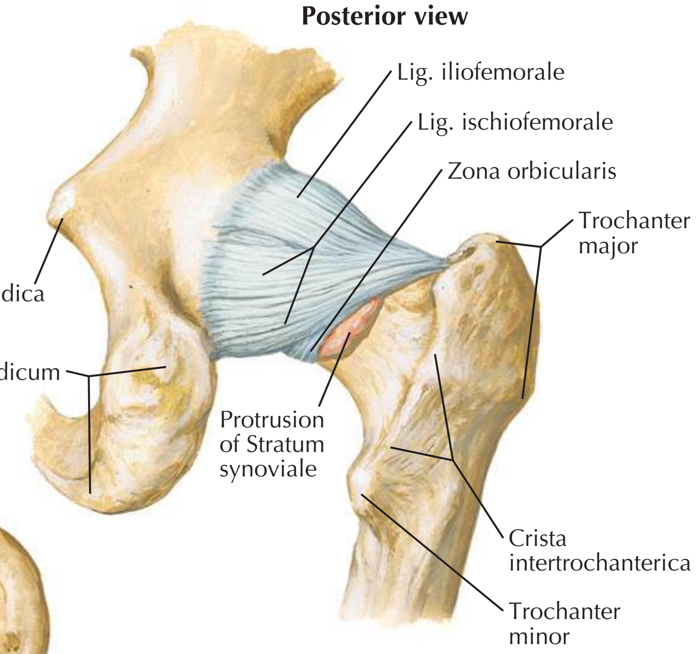

Lateral view
Lineae gluteae
posterior
anterior
inferior
Spina iliaca posterior superior
Spina iliaca posterior inferior
Incisura ischiadica major
Corpus ossis ilium
Spina ischiadica
Incisura ischiadica minor
Corpus ossis ischii
Tuber ischiadicum
Ramus ossis ischii
Linea intermedia
Tuberculum iliacum
Labium externum
Crista iliaca
Ala ossis ilium (Facies glutealis)
Spina iliaca anterior superior
Spina iliaca anterior inferior
Acetabulum
Facies lunata
Margo acetabuli
Incisura acetabuli
Ramus superior ossis pubis
Tuberculum pubicum
Crista obturatoria
Foramen obturatum
Ramus inferior ossis pubis
Linea intermedia
Labium internum
Crista iliaca
Tuberositas iliaca
Spina iliaca posterior superior
Facies auricularis ossis ilium (for Os sacrum)
Spina iliaca posterior inferior
Incisura ischiadica major
Spina ischiadica
Corpus ossis ilium
Incisura ischiadica minor
Corpus ossis ischii
Tuber ischiadicum
Ramus ossis ischii
Spina iliaca anterior superior
Ala ossis ilium (Fossa iliaca)
Spina iliaca anterior inferior
Linea arcuata
Eminentia iliopubica
Ramus superior ossis pubis
Pecten ossis pubis
Tuberculum pubicum
Facies symphysialis
Sulcus obturatorius
Ramus inferior ossis pubis
Foramen obturatum
Medial view

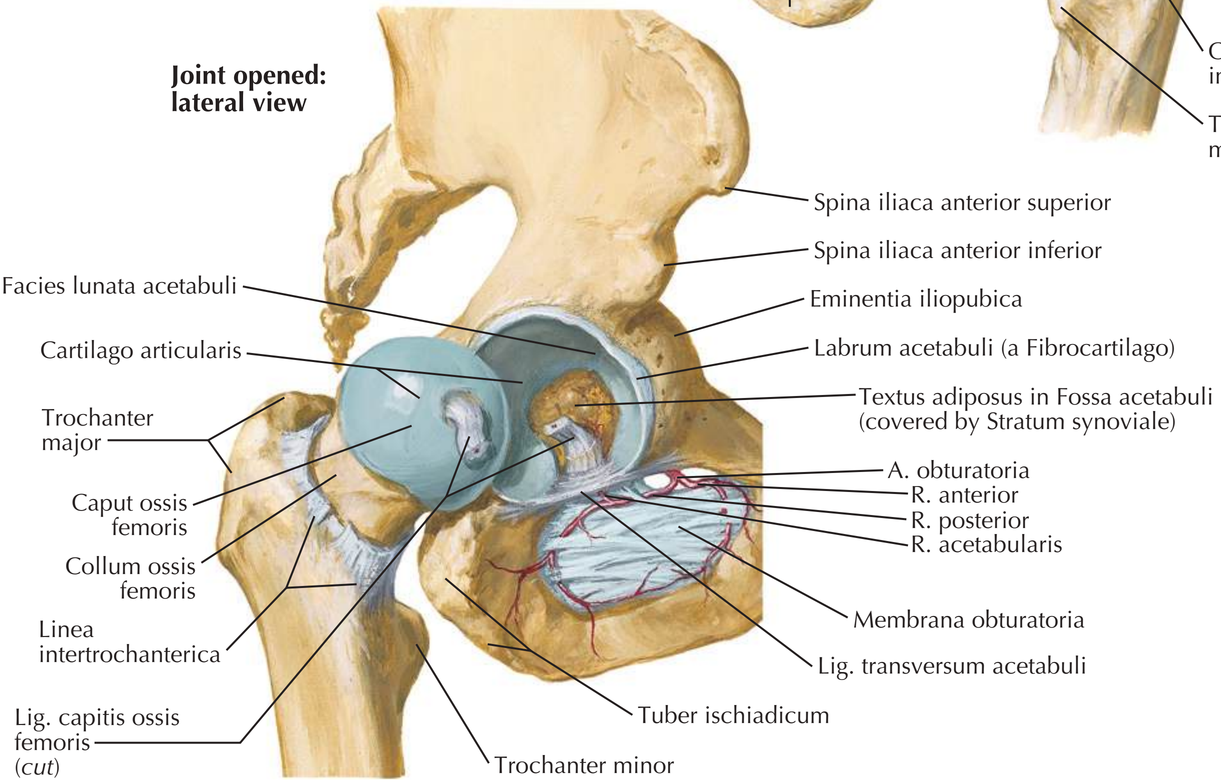
🟨 **Os ilium**

🟦 **Os ischii (Ischium)**

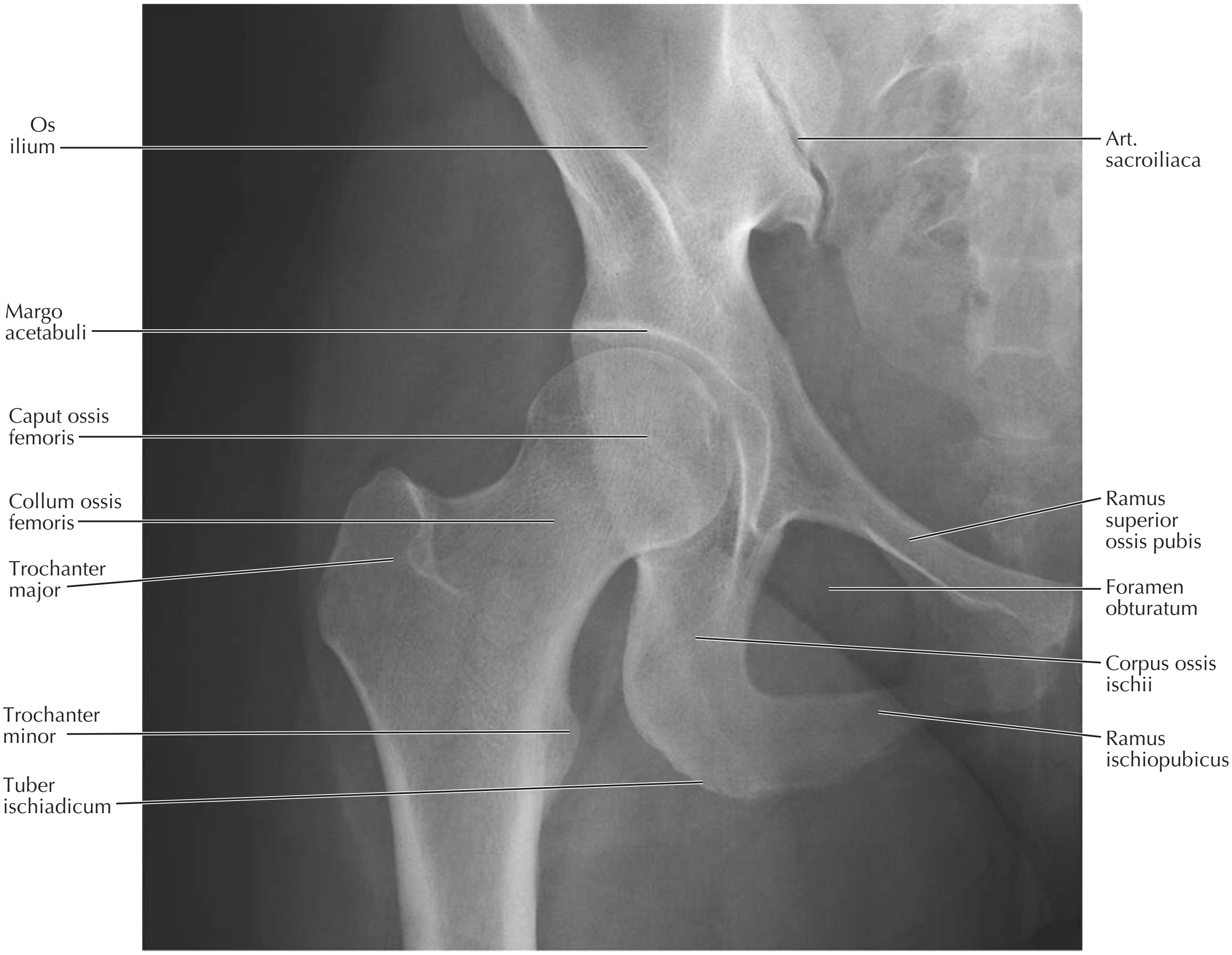
🟥 **Os pubis**

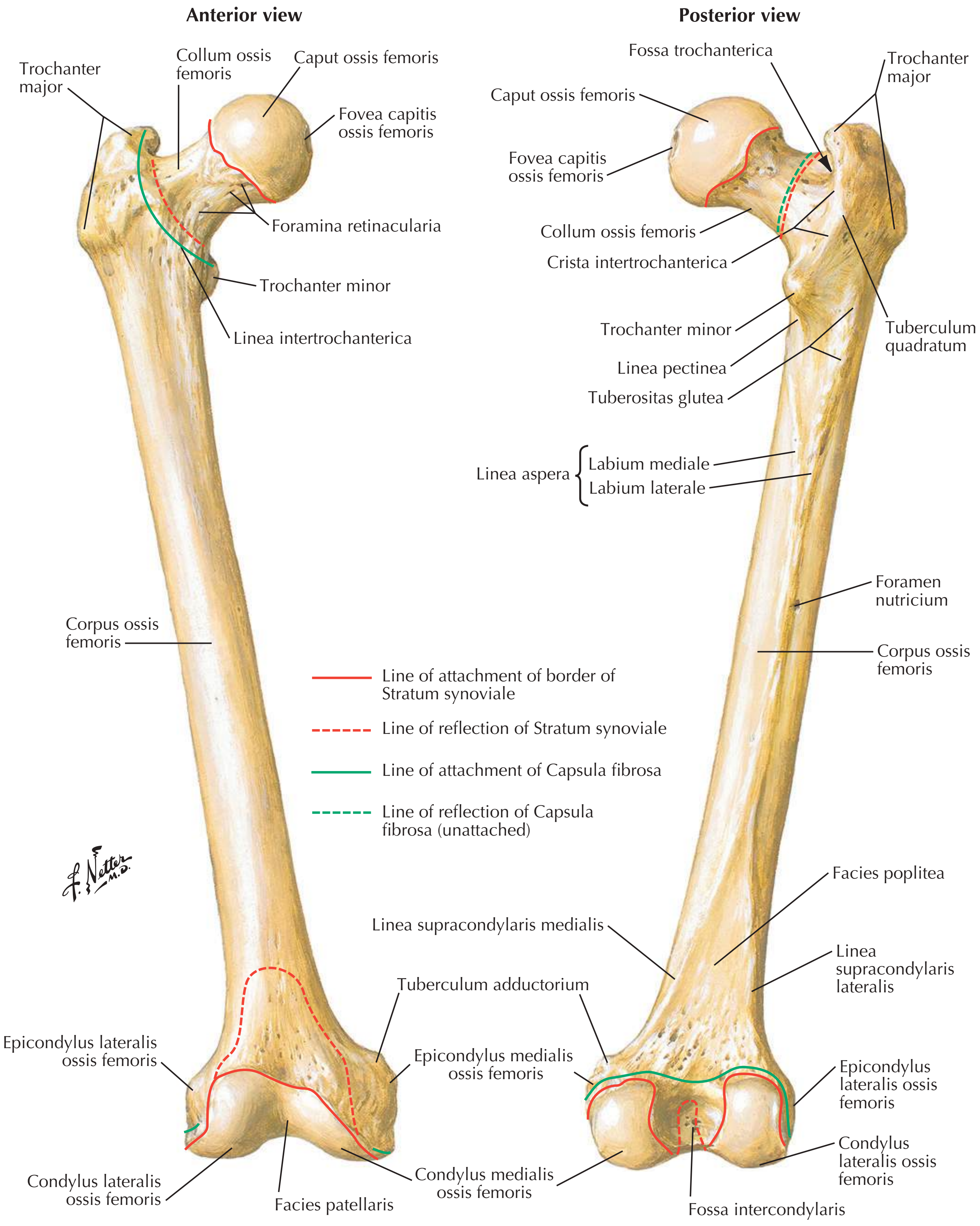

Anterior view
Lig. iliofemorale (Y ligament of Bigelow)
Bursa iliopectinea (over gap between ligaments)
Lig. pubofemorale
Ramus superior ossis pubis
Ramus ischiopubicus
Spina iliaca anterior superior
Spina iliaca anterior inferior
Trochanter major
Trochanter minor
Linea intertrochanterica


Posterior view
Lig. iliofemorale
Lig. ischiofemorale
Zona orbicularis
Trochanter major
Spina ischiadica
Tuber ischiadicum
Protrusion of Stratum synoviale
Crista intertrochanterica
Trochanter minor


Joint opened: lateral view
Spina iliaca anterior superior
Spina iliaca anterior inferior
Facies lunata acetabuli
Eminentia iliopubica
Cartilago articularis
Labrum acetabuli (a Fibrocartilago)
Textus adiposus in Fossa acetabuli (covered by Stratum synoviale)
Trochanter major
A. obturatoria
R. anterior
R. posterior
R. acetabularis
Caput ossis femoris
Collum ossis femoris
Membrana obturatoria
Linea intertrochanterica
Lig. transversum acetabuli
Lig. capitis ossis femoris (cut)
Tuber ischiadicum
Trochanter minor

See also Plates 335, 477, 480

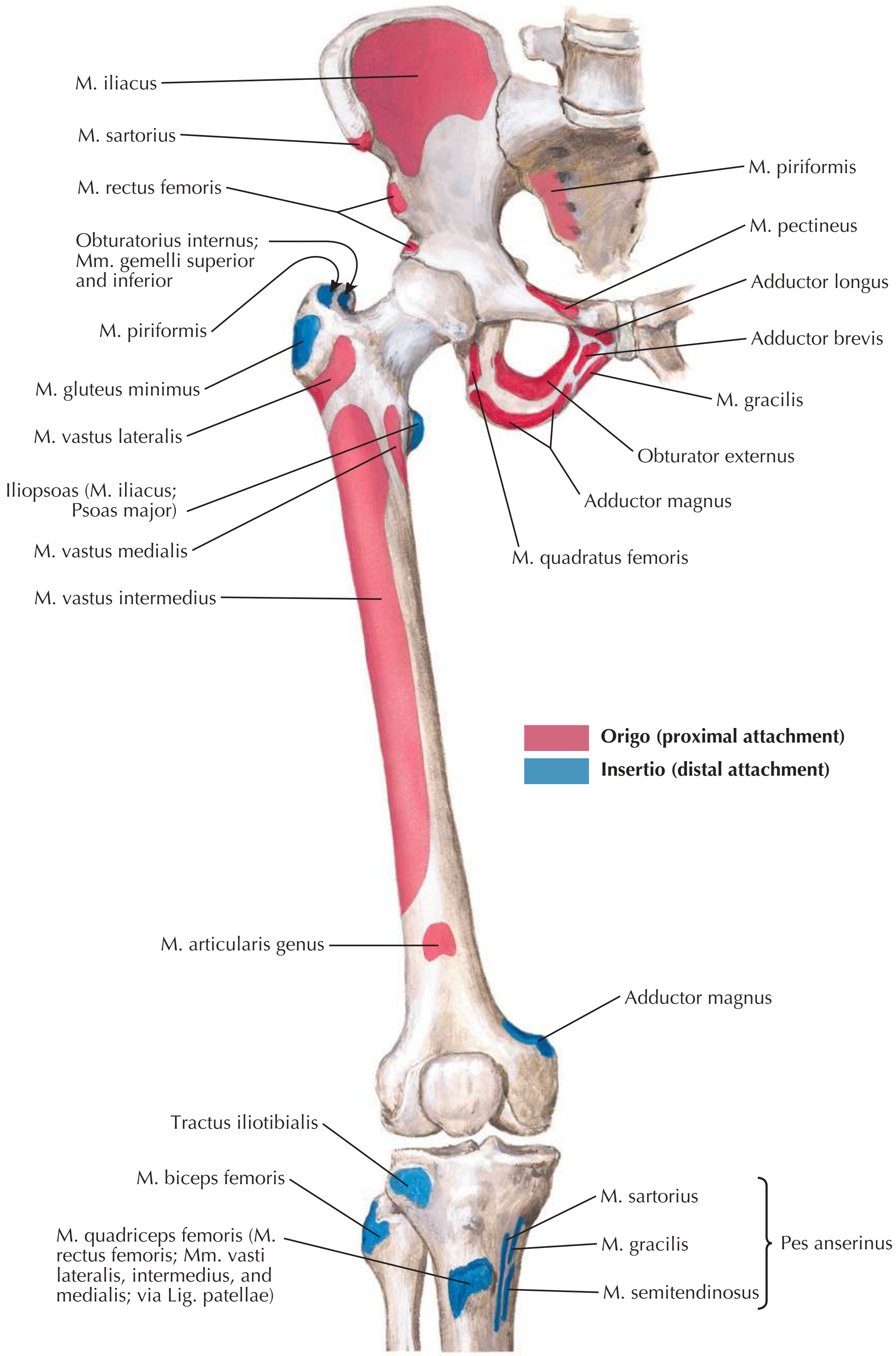

Os ilium
Margo acetabuli
Caput ossis femoris
Collum ossis femoris
Trochanter major
Trochanter minor
Tuber ischiadicum
Art. sacroiliaca
Ramus superior ossis pubis
Foramen obturatum
Corpus ossis ischii
Ramus ischiopubicus


Anterior view

Posterior view
Trochanter major
Collum ossis femoris
Caput ossis femoris
Fovea capitis ossis femoris
Foramina retinacularia
Trochanter minor
Linea intertrochanterica
Corpus ossis femoris
Epicondylus lateralis ossis femoris
Condylus lateralis ossis femoris
Facies patellaris
Tuberculum adductorium
Epicondylus medialis ossis femoris
Condylus medialis ossis femoris
Fossa trochanterica
Caput ossis femoris
Fovea capitis ossis femoris
Collum ossis femoris
Crista intertrochanterica
Trochanter major
Tuberculum quadratum
Trochanter minor
Linea pectinea
Tuberositas glutea
Linea aspera
Labium mediale
Labium laterale
Foramen nutricium
Corpus ossis femoris
Facies poplitea
Linea supracondylaris medialis
Linea supracondylaris lateralis
Epicondylus medialis ossis femoris
Epicondylus lateralis ossis femoris
Condylus medialis ossis femoris
Condylus lateralis ossis femoris
Fossa intercondylaris
Line of attachment of border of Stratum synoviale
Line of reflection of Stratum synoviale
Line of attachment of Capsula fibrosa
Line of reflection of Capsula fibrosa (unattached)
F. Netter M.D.

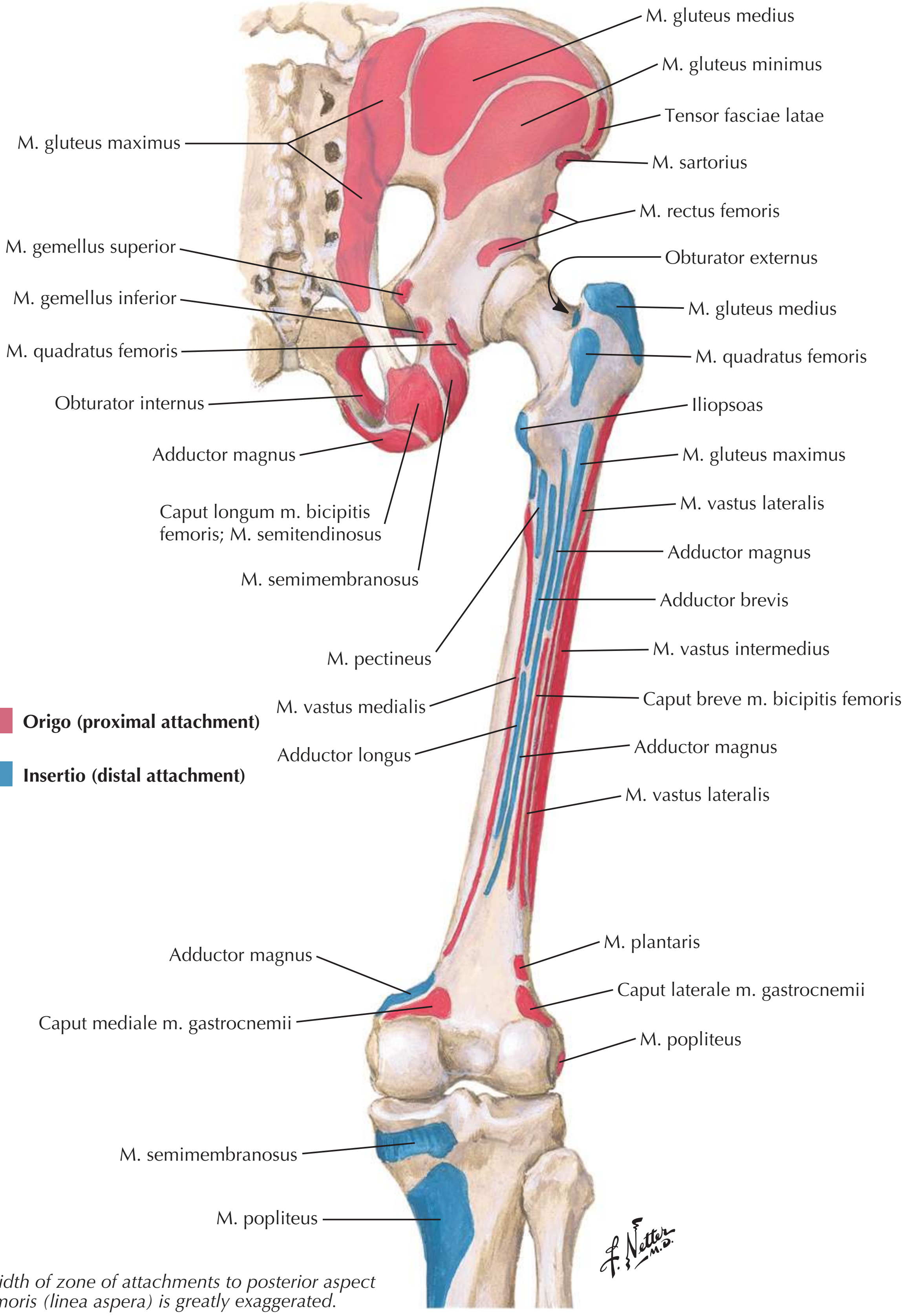
Bony Attachments of Muscles of Hip and Thigh: Anterior View

See also Plates 478, 534


M. iliacus
M. sartorius
M. rectus femoris
Obturatorius internus; Mm. gemelli superior and inferior
M. piriformis
M. gluteus minimus
M. vastus lateralis
Iliopsoas (M. iliacus; Psoas major)
M. vastus medialis
M. vastus intermedius
M. piriformis
M. pectineus
Adductor longus
Adductor brevis
M. gracilis
Obturator externus
Adductor magnus
M. quadratus femoris
🟥 Origo (proximal attachment)
🟦 Insertio (distal attachment)
M. articularis genus
Adductor magnus
Tractus iliotibialis
M. biceps femoris
M. quadriceps femoris (M. rectus femoris; Mm. vasti lateralis, intermedius, and medialis; via Lig. patellae)
M. sartorius
M. gracilis
M. semitendinosus
Pes anserinus

Bony Attachments of Muscles of Hip and Thigh: Posterior View

See also Plate 478


M. gluteus medius
M. gluteus minimus
Tensor fasciae latae
M. sartorius
M. rectus femoris
Obturator externus
M. gluteus medius
M. quadratus femoris
Iliopsoas
M. gluteus maximus
M. vastus lateralis
Adductor magnus
Adductor brevis
M. vastus intermedius
Caput breve m. bicipitis femoris
Adductor magnus
M. vastus lateralis
M. plantaris
Caput laterale m. gastrocnemii
M. popliteus
M. gluteus maximus
M. gemellus superior
M. gemellus inferior
M. quadratus femoris
Obturator internus
Adductor magnus
Caput longum m. bicipitis femoris; M. semitendinosus
M. semimembranosus
M. pectineus
M. vastus medialis
Adductor longus
Adductor magnus
Caput mediale m. gastrocnemii
M. semimembranosus
M. popliteus

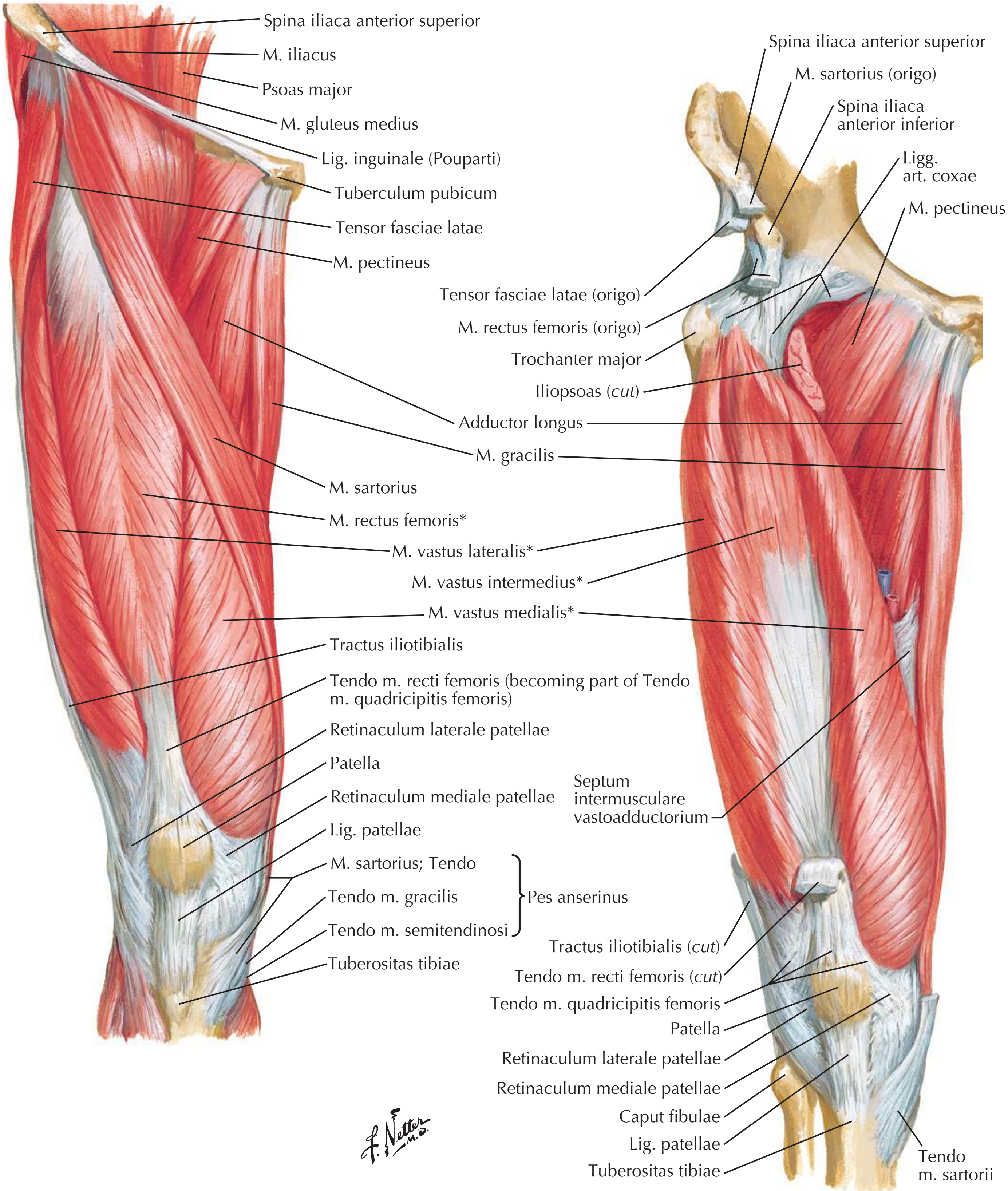
🟥 **Origo (proximal attachment)**

🟦 **Insertio (distal attachment)**

Note: Width of zone of attachments to posterior aspect of Os femoris (linea aspera) is greatly exaggerated.

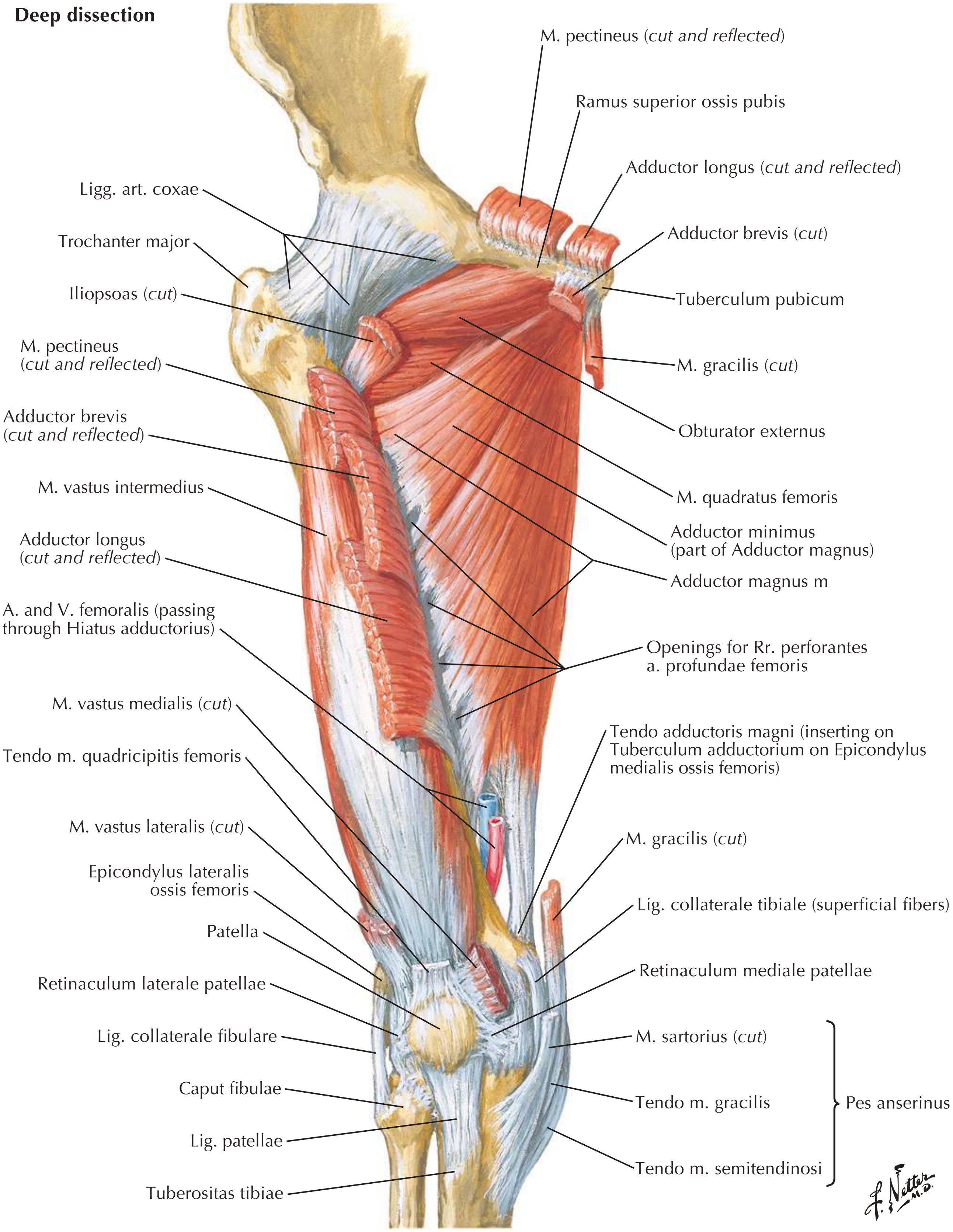
Muscles of Thigh: Anterior Views

See also Plate 265


Spina iliaca anterior superior
M. iliacus
Psoas major
M. gluteus medius
Lig. inguinale (Pouparti)
Tuberculum pubicum
Tensor fasciae latae
M. pectineus
Spina iliaca anterior superior
M. sartorius (origo)
Spina iliaca anterior inferior
Ligg. art. coxae
M. pectineus
Tensor fasciae latae (origo)
M. rectus femoris (origo)
Trochanter major
Iliopsoas (*cut*)
Adductor longus
M. gracilis
M. sartorius
M. rectus femoris*
M. vastus lateralis*
M. vastus intermedius*
M. vastus medialis*
Tractus iliotibialis
Tendo m. recti femoris (becoming part of Tendo m. quadricipitis femoris)
Retinaculum laterale patellae
Patella
Retinaculum mediale patellae
Septum intermusculare vastoadductorium
Lig. patellae
M. sartorius; Tendo
Tendo m. gracilis
Tendo m. semitendinosi
Pes anserinus
Tuberositas tibiae
Tractus iliotibialis (*cut*)
Tendo m. recti femoris (*cut*)
Tendo m. quadricipitis femoris
Patella
Retinaculum laterale patellae
Retinaculum mediale patellae
Caput fibulae
Lig. patellae
Tuberositas tibiae
Tendo m. sartorii
F. Netter M.D.

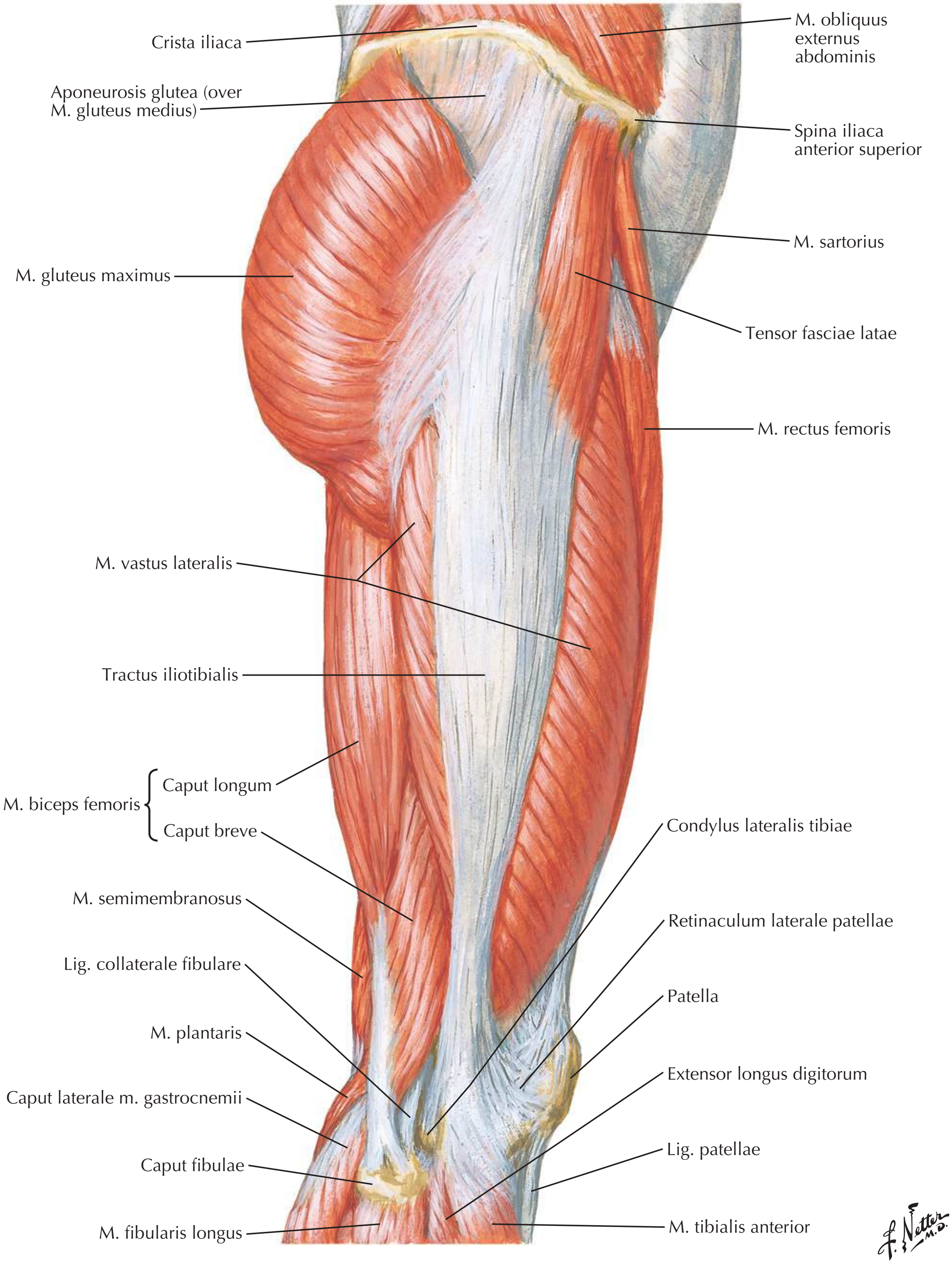
*Muscles of M. quadriceps femoris

Deep dissection


M. pectineus (*cut and reflected*)
Ramus superior ossis pubis
Adductor longus (*cut and reflected*)
Adductor brevis (*cut*)
Tuberculum pubicum
M. gracilis (*cut*)
Obturator externus
M. quadratus femoris
Adductor minimus (part of Adductor magnus)
Adductor magnus m
Openings for Rr. perforantes a. profundae femoris
Tendo adductoris magni (inserting on Tuberculum adductorium on Epicondylus medialis ossis femoris)
M. gracilis (*cut*)
Lig. collaterale tibiale (superficial fibers)
Retinaculum mediale patellae
M. sartorius (*cut*)
Tendo m. gracilis
Tendo m. semitendinosi
Pes anserinus
Ligg. art. coxae
Trochanter major
Iliopsoas (*cut*)
M. pectineus (*cut and reflected*)
Adductor brevis (*cut and reflected*)
M. vastus intermedius
Adductor longus (*cut and reflected*)
A. and V. femoralis (passing through Hiatus adductorius)
M. vastus medialis (*cut*)
Tendo m. quadricipitis femoris
M. vastus lateralis (*cut*)
Epicondylus lateralis ossis femoris
Patella
Retinaculum laterale patellae
Lig. collaterale fibulare
Caput fibulae
Lig. patellae
Tuberositas tibiae
F. Netter M.D.

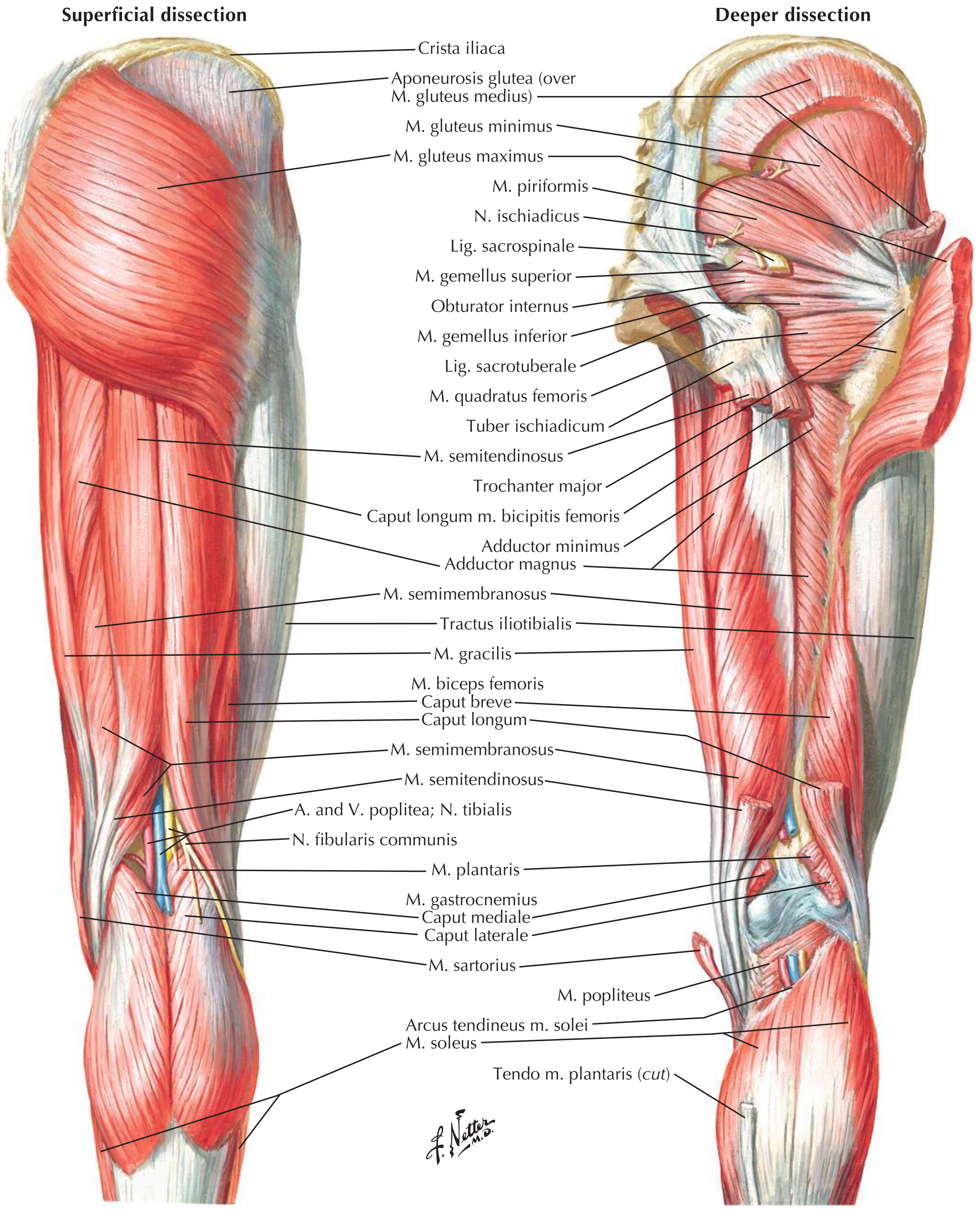
Muscles of Hip and Thigh: Lateral View

See also **Plate 496**


Crista iliaca
Aponeurosis glutea (over M. gluteus medius)
M. gluteus maximus
M. vastus lateralis
Tractus iliotibialis
M. biceps femoris
Caput longum
Caput breve
M. semimembranosus
Lig. collaterale fibulare
M. plantaris
Caput laterale m. gastrocnemii
Caput fibulae
M. fibularis longus
M. obliquus externus abdominis
Spina iliaca anterior superior
M. sartorius
Tensor fasciae latae
M. rectus femoris
Condylus lateralis tibiae
Retinaculum laterale patellae
Patella
Extensor longus digitorum
Lig. patellae
M. tibialis anterior

Muscles of Hip and Thigh: Posterior Views

See also Plates 342, 343, 491

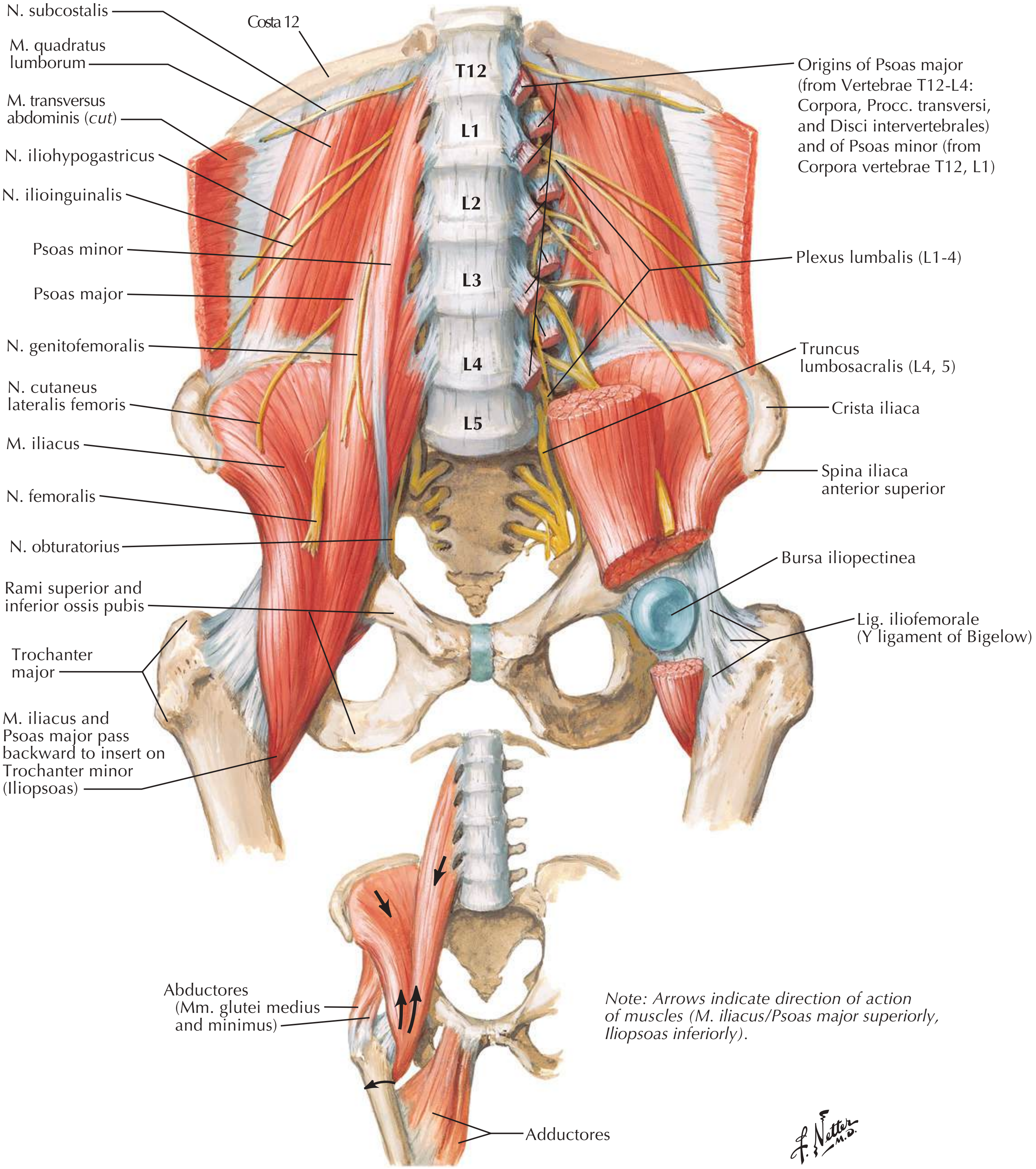

Superficial dissection

Deeper dissection

Crista iliaca
Aponeurosis glutea (over M. gluteus medius)
M. gluteus minimus
M. gluteus maximus
M. piriformis
N. ischiadicus
Lig. sacrospinale
M. gemellus superior
Obturator internus
M. gemellus inferior
Lig. sacrotuberale
M. quadratus femoris
Tuber ischiadicum
M. semitendinosus
Trochanter major
Caput longum m. bicipitis femoris
Adductor minimus
Adductor magnus
M. semimembranosus
Tractus iliotibialis
M. gracilis
M. biceps femoris
Caput breve
Caput longum
M. semimembranosus
M. semitendinosus
A. and V. poplitea; N. tibialis
N. fibularis communis
M. plantaris
M. gastrocnemius
Caput mediale
Caput laterale
M. sartorius
M. popliteus
Arcus tendineus m. solei
M. soleus
Tendo m. plantaris (cut)

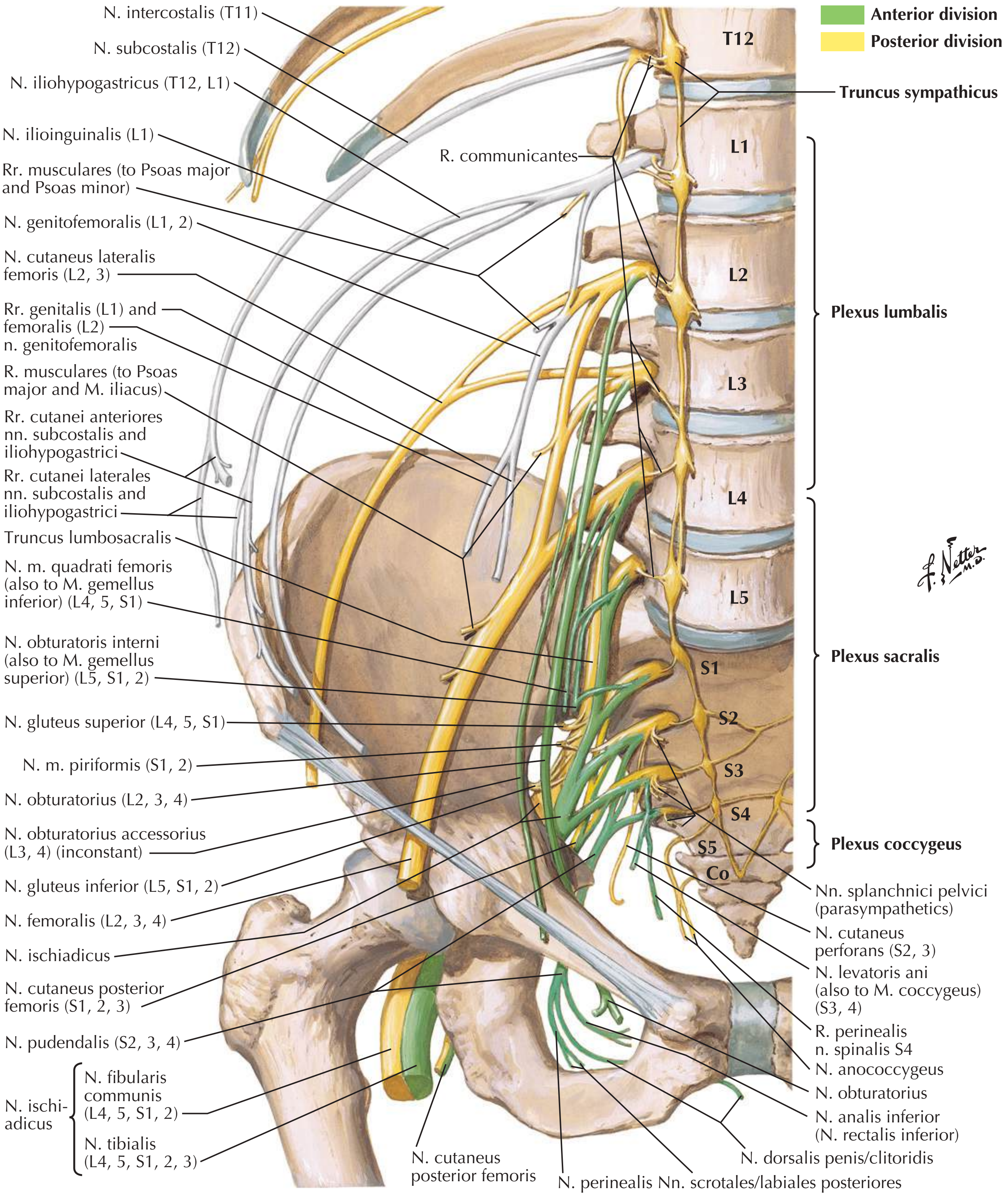
Psoas and Iliacus Muscles

See also Plates 265, 269

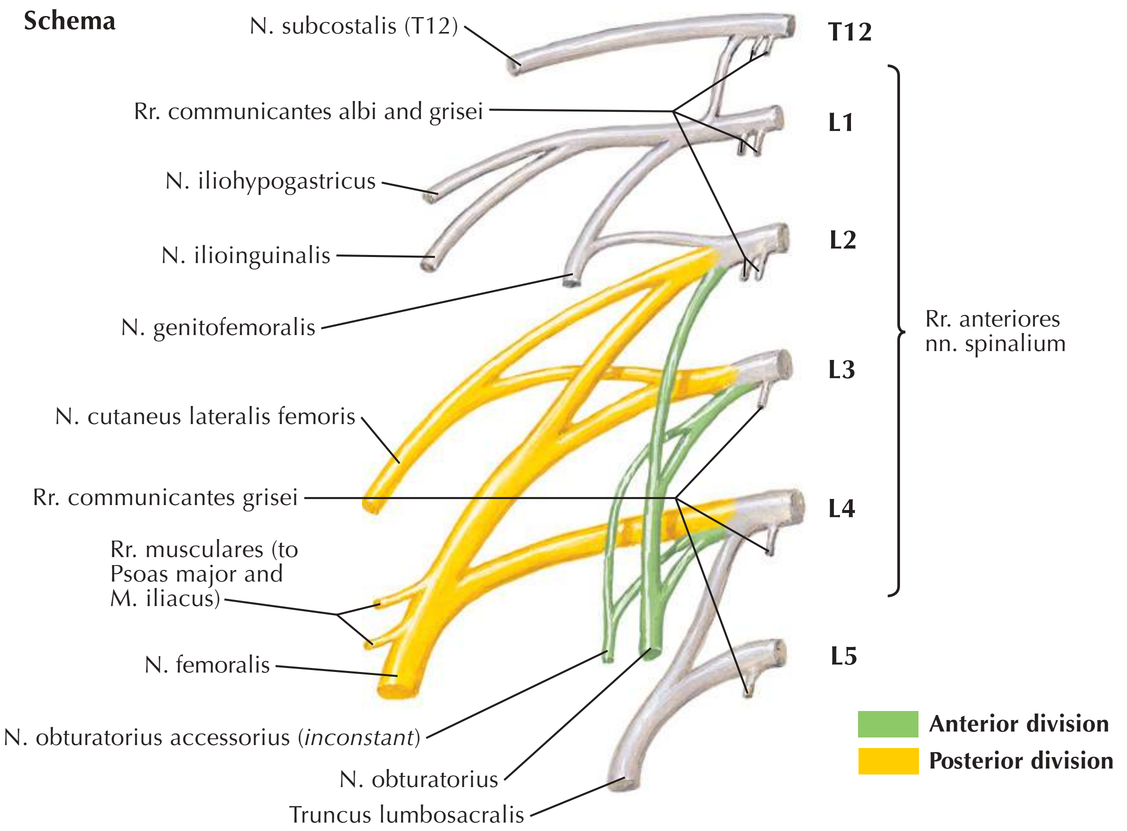

N. subcostalis
Costa 12
M. quadratus lumborum
M. transversus abdominis (*cut*)
N. iliohypogastricus
N. ilioinguinalis
Psoas minor
Psoas major
N. genitofemoralis
N. cutaneus lateralis femoris
M. iliacus
N. femoralis
N. obturatorius
Rami superior and inferior ossis pubis
Trochanter major
M. iliacus and Psoas major pass backward to insert on Trochanter minor (Iliopsoas)
T12
L1
L2
L3
L4
L5
Origins of Psoas major (from Vertebrae T12-L4: Corpora, Procc. transversi, and Disci intervertebrales) and of Psoas minor (from Corpora vertebrae T12, L1)
Plexus lumbalis (L1-4)
Truncus lumbosacralis (L4, 5)
Crista iliaca
Spina iliaca anterior superior
Bursa iliopectinea
Lig. iliofemorale (Y ligament of Bigelow)
Abductores (Mm. glutei medius and minimus)
Adductores

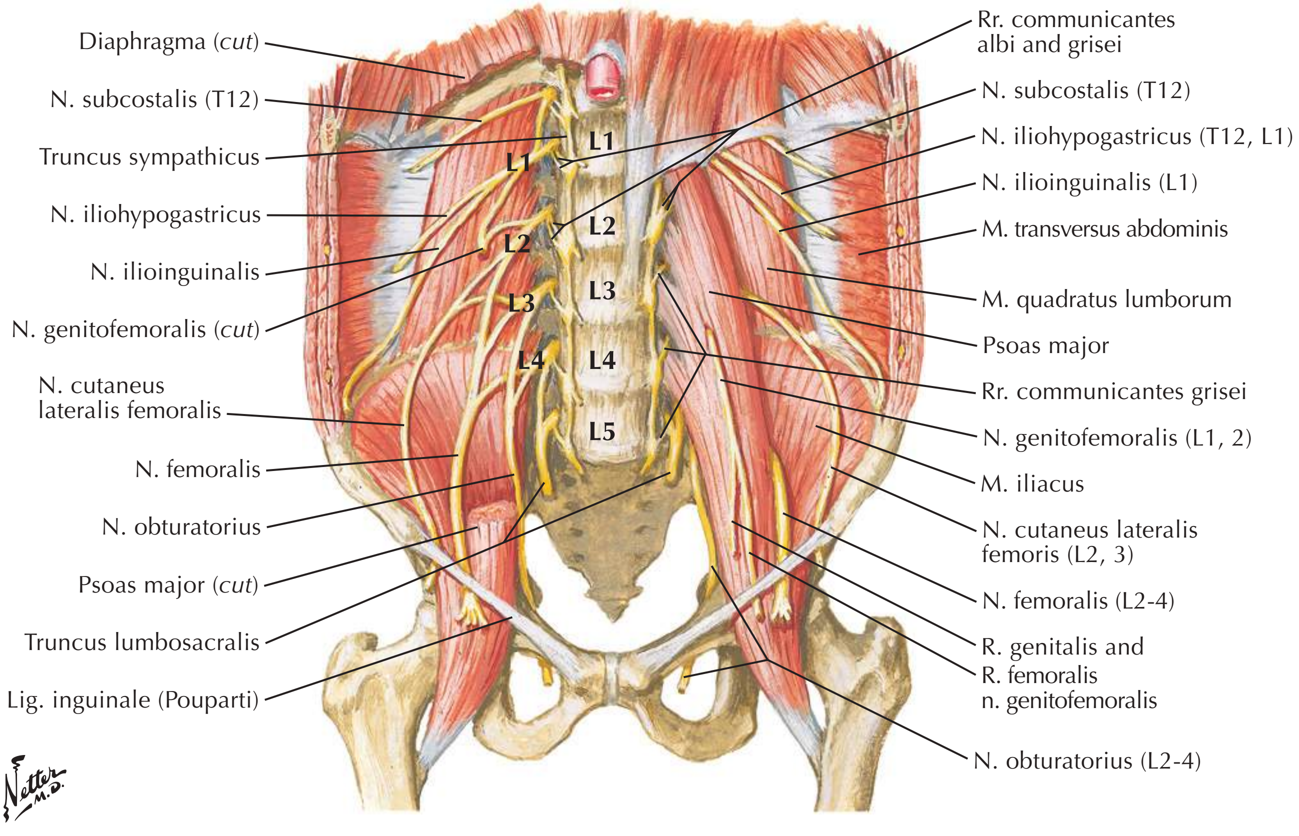
Note: Arrows indicate direction of action of muscles (M. iliacus/Psoas major superiorly, Iliopsoas inferiorly).

See also Plate 269


🟩 Anterior division
🟨 Posterior division
N. intercostalis (T11)
N. subcostalis (T12)
N. iliohypogastricus (T12, L1)
N. ilioinguinalis (L1)
Rr. musculares (to Psoas major and Psoas minor)
N. genitofemoralis (L1, 2)
N. cutaneus lateralis femoris (L2, 3)
Rr. genitalis (L1) and femoralis (L2) n. genitofemoralis
R. musculares (to Psoas major and M. iliacus)
Rr. cutanei anteriores nn. subcostalis and iliohypogastrici
Rr. cutanei laterales nn. subcostalis and iliohypogastrici
Truncus lumbosacralis
N. m. quadrati femoris (also to M. gemellus inferior) (L4, 5, S1)
N. obturatoris interni (also to M. gemellus superior) (L5, S1, 2)
N. gluteus superior (L4, 5, S1)
N. m. piriformis (S1, 2)
N. obturatorius (L2, 3, 4)
N. obturatorius accessorius (L3, 4) (inconstant)
N. gluteus inferior (L5, S1, 2)
N. femoralis (L2, 3, 4)
N. ischiadicus
N. cutaneus posterior femoris (S1, 2, 3)
N. pudendalis (S2, 3, 4)
N. ischiadicus
N. fibularis communis (L4, 5, S1, 2)
N. tibialis (L4, 5, S1, 2, 3)
N. cutaneus posterior femoris
N. perinealis Nn. scrotales/labiales posteriores
N. dorsalis penis/clitoridis
N. analis inferior (N. rectalis inferior)
N. obturatorius
N. anococcygeus
R. perinealis n. spinalis S4
N. levatoris ani (also to M. coccygeus) (S3, 4)
N. cutaneus perforans (S2, 3)
Nn. splanchnici pelvici (parasympathetics)
Plexus coccygeus
Plexus sacralis
Plexus lumbalis
Truncus sympathicus
R. communicantes
T12
L1
L2
L3
L4
L5
S1
S2
S3
S4
S5
Co
F. Netter M.D.

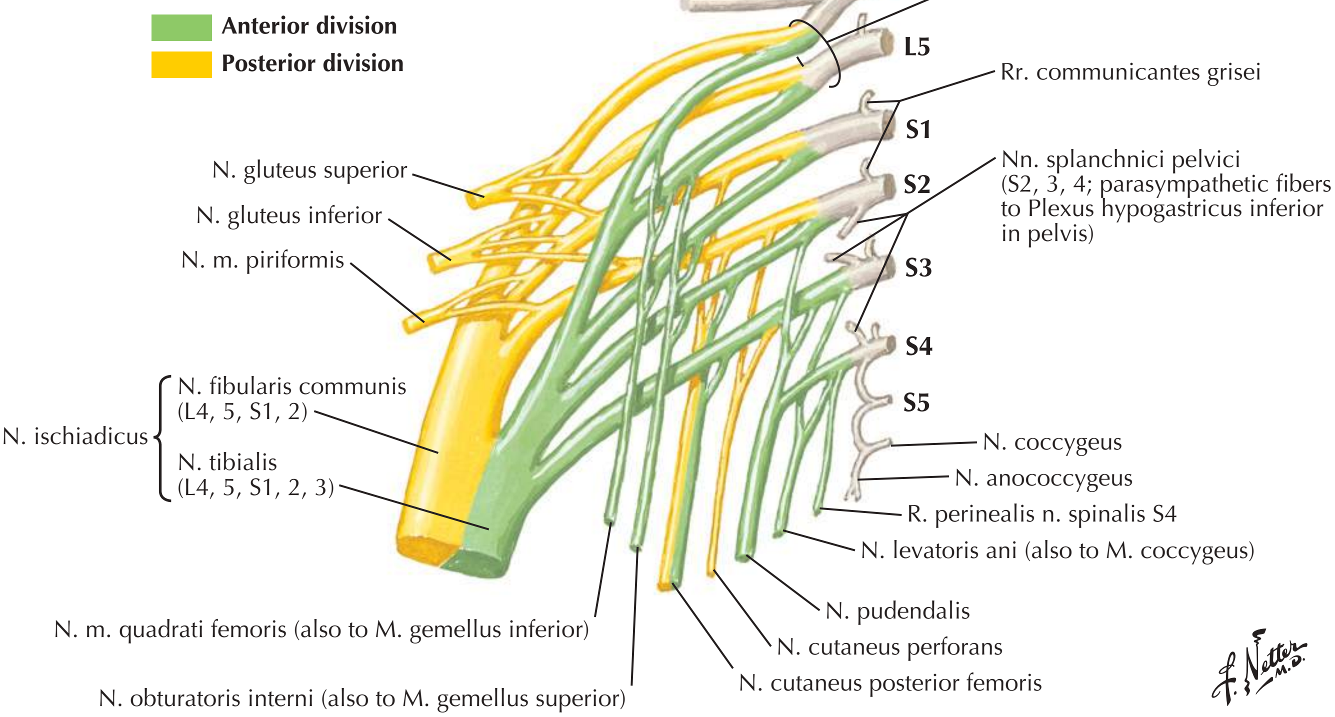
See also Plate 269

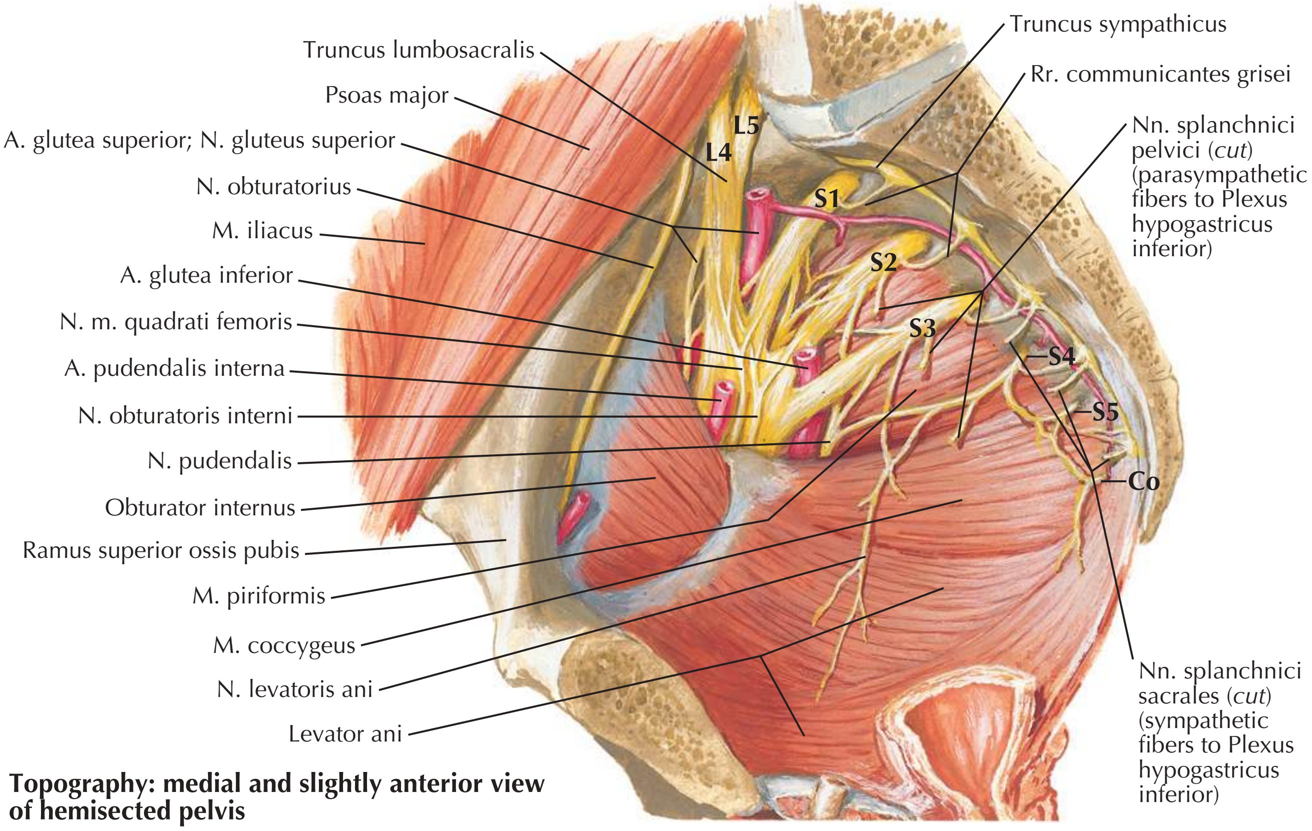

Schema
N. subcostalis (T12)
T12
Rr. communicantes albi and grisei
L1
N. iliohypogastricus
N. ilioinguinalis
L2
N. genitofemoralis
Rr. anteriores nn. spinalium
L3
N. cutaneus lateralis femoris
Rr. communicantes grisei
L4
Rr. musculares (to Psoas major and M. iliacus)
N. femoralis
L5
N. obturatorius accessorius (inconstant)
🟩 Anterior division
🟨 Posterior division
N. obturatorius
Truncus lumbosacralis


Diaphragma (cut)
N. subcostalis (T12)
Truncus sympathicus
N. iliohypogastricus
N. ilioinguinalis
N. genitofemoralis (cut)
N. cutaneus lateralis femoralis
N. femoralis
N. obturatorius
Psoas major (cut)
Truncus lumbosacralis
Lig. inguinale (Pouparti)
L1
L1
L2
L2
L3
L3
L4
L4
L5
Rr. communicantes albi and grisei
N. subcostalis (T12)
N. iliohypogastricus (T12, L1)
N. ilioinguinalis (L1)
M. transversus abdominis
M. quadratus lumborum
Psoas major
Rr. communicantes grisei
N. genitofemoralis (L1, 2)
M. iliacus
N. cutaneus lateralis femoris (L2, 3)
N. femoralis (L2-4)
R. genitalis and R. femoralis n. genitofemoralis
N. obturatorius (L2-4)

See also Plate 269

Schema

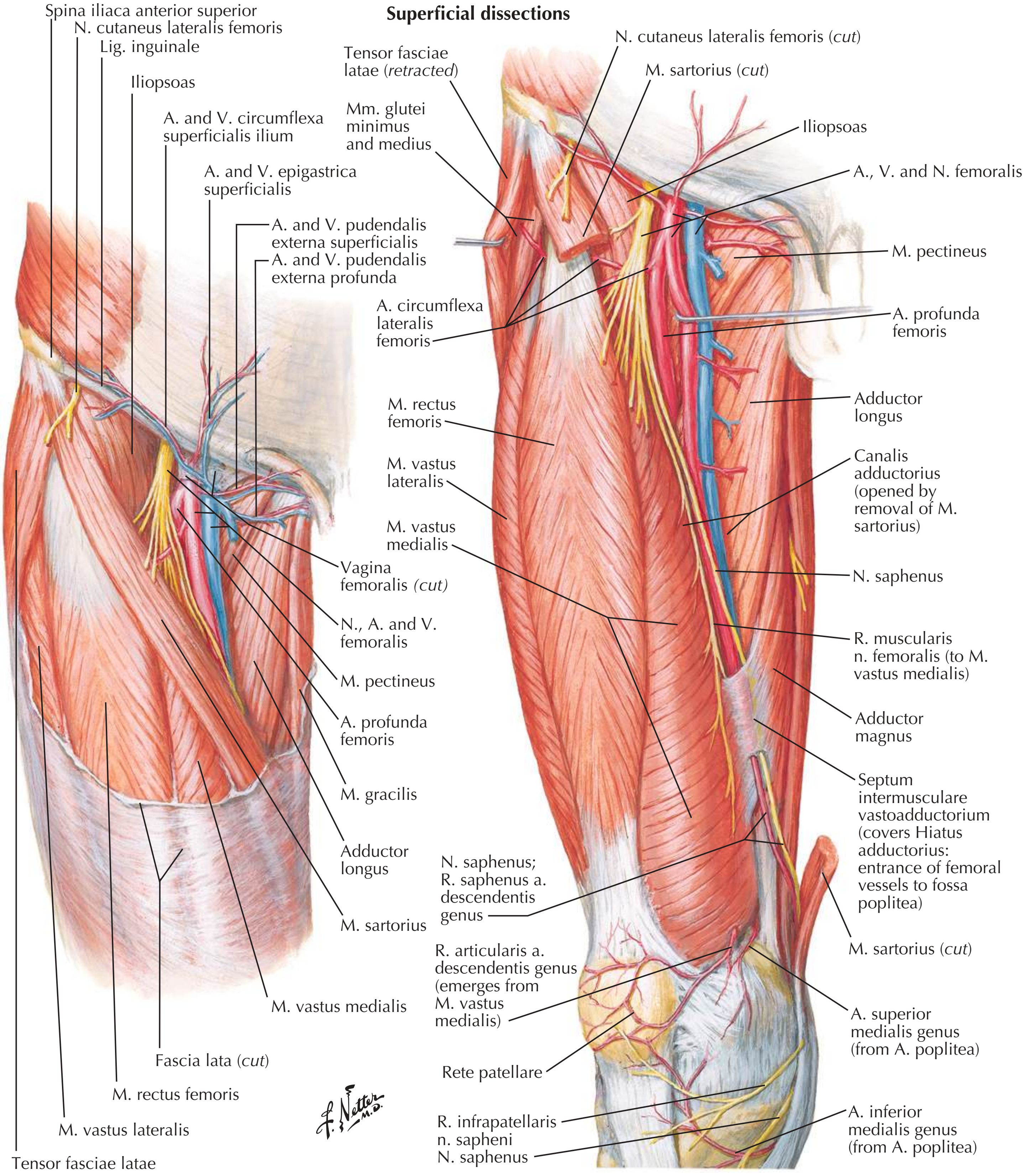

🟩 Anterior division
🟨 Posterior division
L4
L5
S1
S2
S3
S4
S5
Truncus lumbosacralis
Rr. communicantes grisei
Nn. splanchnici pelvici (S2, 3, 4; parasympathetic fibers to Plexus hypogastricus inferior in pelvis)
N. gluteus superior
N. gluteus inferior
N. m. piriformis
N. ischiadicus
N. fibularis communis (L4, 5, S1, 2)
N. tibialis (L4, 5, S1, 2, 3)
N. coccygeus
N. anococcygeus
R. perinealis n. spinalis S4
N. levatoris ani (also to M. coccygeus)
N. pudendalis
N. cutaneus perforans
N. cutaneus posterior femoris
N. m. quadrati femoris (also to M. gemellus inferior)
N. obturatoris interni (also to M. gemellus superior)
F. Netter M.D.


Truncus lumbosacralis
Psoas major
A. glutea superior; N. gluteus superior
N. obturatorius
M. iliacus
A. glutea inferior
N. m. quadrati femoris
A. pudendalis interna
N. obturatoris interni
N. pudendalis
Obturator internus
Ramus superior ossis pubis
M. piriformis
M. coccygeus
N. levatoris ani
Levator ani
L5
L4
S1
S2
S3
S4
S5
Co
Truncus sympathicus
Rr. communicantes grisei
Nn. splanchnici pelvici (*cut*) (parasympathetic fibers to Plexus hypogastricus inferior)
Nn. splanchnici sacrales (*cut*) (sympathetic fibers to Plexus hypogastricus inferior)

Topography: medial and slightly anterior view of hemisected pelvis

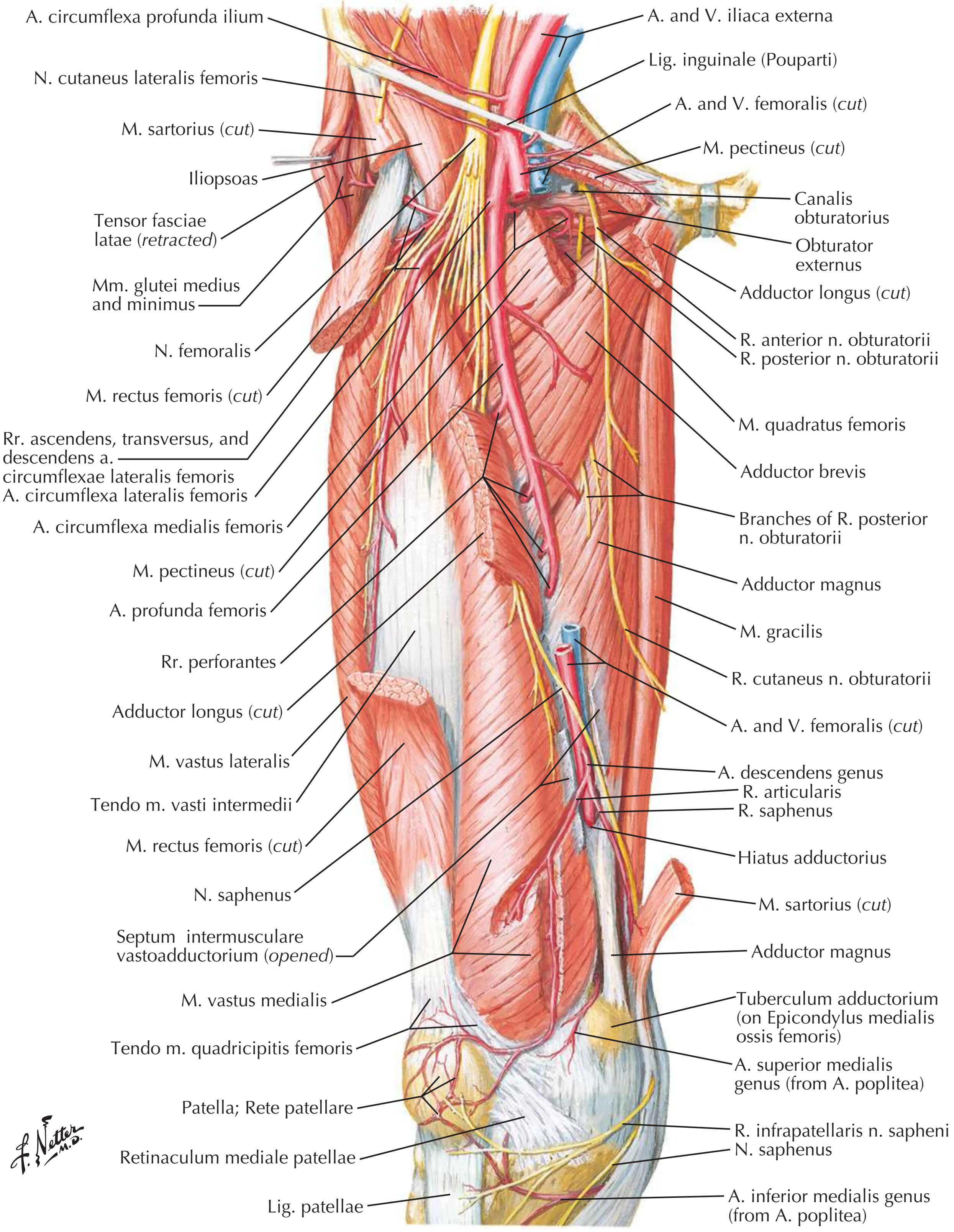
Arteries and Nerves of Thigh: Anterior Views

See also Plates 503, 529


Superficial dissections
Spina iliaca anterior superior
N. cutaneus lateralis femoris
Lig. inguinale
Iliopsoas
A. and V. circumflexa superficialis ilium
A. and V. epigastrica superficialis
A. and V. pudendalis externa superficialis
A. and V. pudendalis externa profunda
Vagina femoralis (*cut*)
N., A. and V. femoralis
M. pectineus
A. profunda femoris
M. gracilis
Adductor longus
M. sartorius
M. vastus medialis
Fascia lata (*cut*)
M. rectus femoris
M. vastus lateralis
Tensor fasciae latae
Tensor fasciae latae (*retracted*)
Mm. glutei minimus and medius
A. circumflexa lateralis femoris
M. rectus femoris
M. vastus lateralis
M. vastus medialis
N. saphenus; R. saphenus a. descendentis genus
R. articularis a. descendentis genus (emerges from M. vastus medialis)
Rete patellare
R. infrapatellaris n. sapheni
N. saphenus
N. cutaneus lateralis femoris (*cut*)
M. sartorius (*cut*)
Iliopsoas
A., V. and N. femoralis
M. pectineus
A. profunda femoris
Adductor longus
Canalis adductorius (opened by removal of M. sartorius)
N. saphenus
R. muscularis n. femoralis (to M. vastus medialis)
Adductor magnus
Septum intermusculare vastoadductorium (covers Hiatus adductorius: entrance of femoral vessels to fossa poplitea)
M. sartorius (*cut*)
A. superior medialis genus (from A. poplitea)
A. inferior medialis genus (from A. poplitea)

See also Plates 529, 530

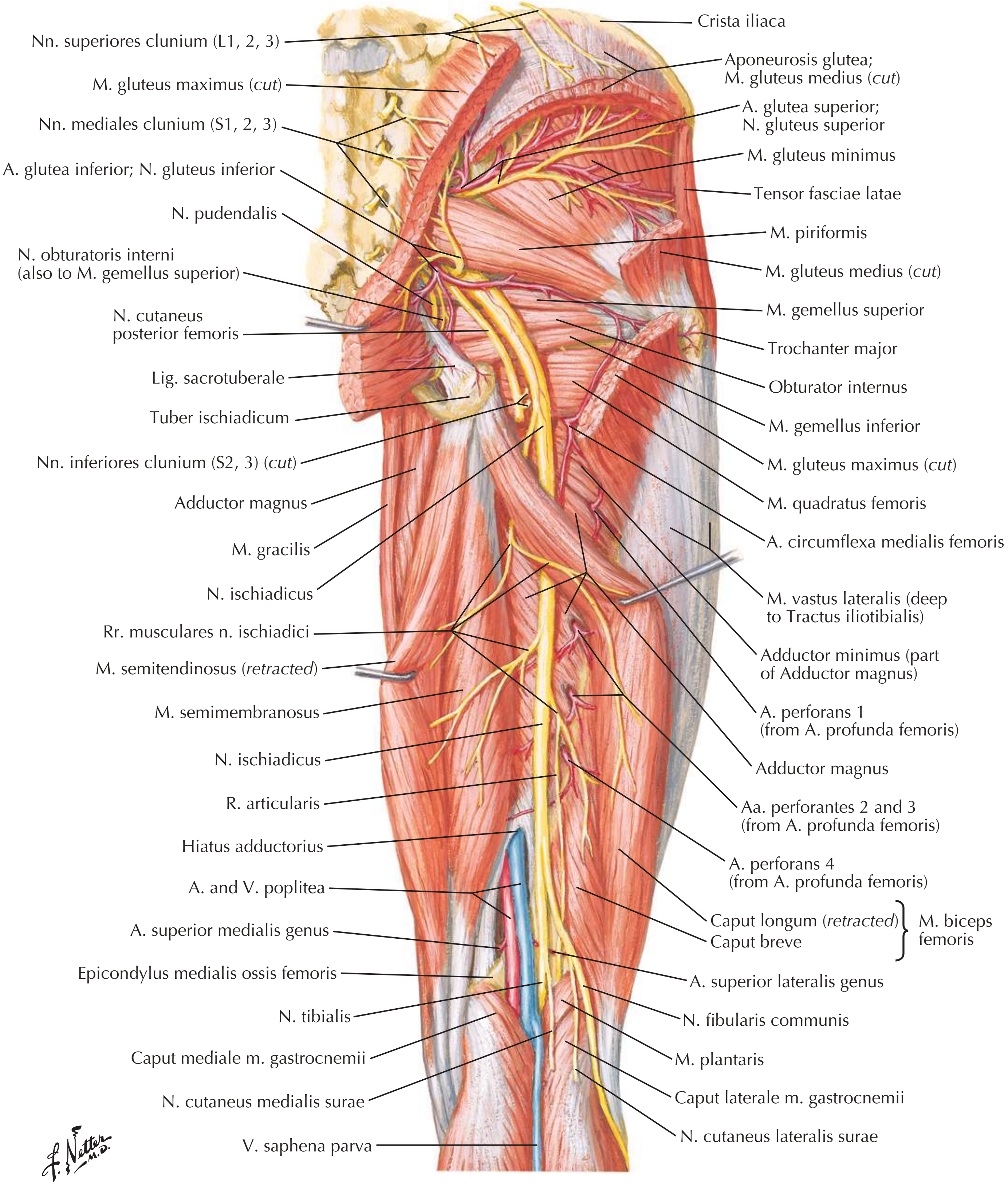
Deep dissection


A. circumflexa profunda ilium
N. cutaneus lateralis femoris
M. sartorius (*cut*)
Iliopsoas
Tensor fasciae latae (*retracted*)
Mm. glutei medius and minimus
N. femoralis
M. rectus femoris (*cut*)
Rr. ascendens, transversus, and descendens a. circumflexae lateralis femoris
A. circumflexa lateralis femoris
A. circumflexa medialis femoris
M. pectineus (*cut*)
A. profunda femoris
Rr. perforantes
Adductor longus (*cut*)
M. vastus lateralis
Tendo m. vasti intermedii
M. rectus femoris (*cut*)
N. saphenus
Septum intermusculare vastoadductorium (*opened*)
M. vastus medialis
Tendo m. quadricipitis femoris
Patella; Rete patellare
Retinaculum mediale patellae
Lig. patellae
A. and V. iliaca externa
Lig. inguinale (Pouparti)
A. and V. femoralis (*cut*)
M. pectineus (*cut*)
Canalis obturatorius
Obturator externus
Adductor longus (*cut*)
R. anterior n. obturatorii
R. posterior n. obturatorii
M. quadratus femoris
Adductor brevis
Branches of R. posterior n. obturatorii
Adductor magnus
M. gracilis
R. cutaneus n. obturatorii
A. and V. femoralis (*cut*)
A. descendens genus
R. articularis
R. saphenus
Hiatus adductorius
M. sartorius (*cut*)
Adductor magnus
Tuberculum adductorium (on Epicondylus medialis ossis femoris)
A. superior medialis genus (from A. poplitea)
R. infrapatellaris n. sapheni
N. saphenus
A. inferior medialis genus (from A. poplitea)
F. Netter M.D.

Arteries and Nerves of Thigh: Posterior View

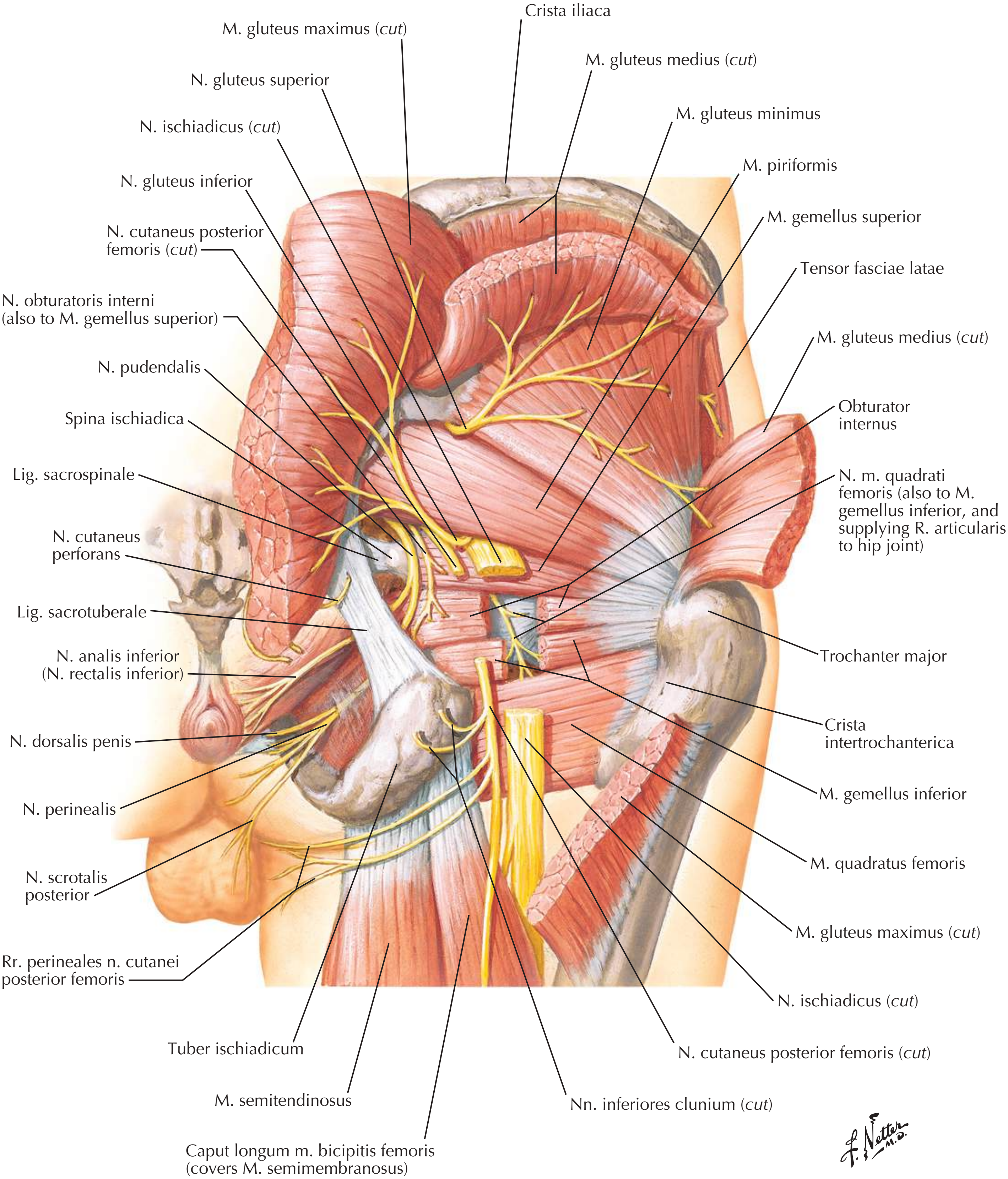
See also Plate 531

Deep dissection


Nn. superiores clunium (L1, 2, 3)
M. gluteus maximus (*cut*)
Nn. mediales clunium (S1, 2, 3)
A. glutea inferior; N. gluteus inferior
N. pudendalis
N. obturatoris interni
(also to M. gemellus superior)
N. cutaneus
posterior femoris
Lig. sacrotuberale
Tuber ischiadicum
Nn. inferiores clunium (S2, 3) (*cut*)
Adductor magnus
M. gracilis
N. ischiadicus
Rr. musculares n. ischiadici
M. semitendinosus (*retracted*)
M. semimembranosus
N. ischiadicus
R. articularis
Hiatus adductorius
A. and V. poplitea
A. superior medialis genus
Epicondylus medialis ossis femoris
N. tibialis
Caput mediale m. gastrocnemii
N. cutaneus medialis surae
V. saphena parva
Crista iliaca
Aponeurosis glutea;
M. gluteus medius (*cut*)
A. glutea superior;
N. gluteus superior
M. gluteus minimus
Tensor fasciae latae
M. piriformis
M. gluteus medius (*cut*)
M. gemellus superior
Trochanter major
Obturator internus
M. gemellus inferior
M. gluteus maximus (*cut*)
M. quadratus femoris
A. circumflexa medialis femoris
M. vastus lateralis (deep
to Tractus iliotibialis)
Adductor minimus (part
of Adductor magnus)
A. perforans 1
(from A. profunda femoris)
Adductor magnus
Aa. perforantes 2 and 3
(from A. profunda femoris)
A. perforans 4
(from A. profunda femoris)
Caput longum (*retracted*)
Caput breve
M. biceps
femoris
A. superior lateralis genus
N. fibularis communis
M. plantaris
Caput laterale m. gastrocnemii
N. cutaneus lateralis surae
F. Netter M.D.

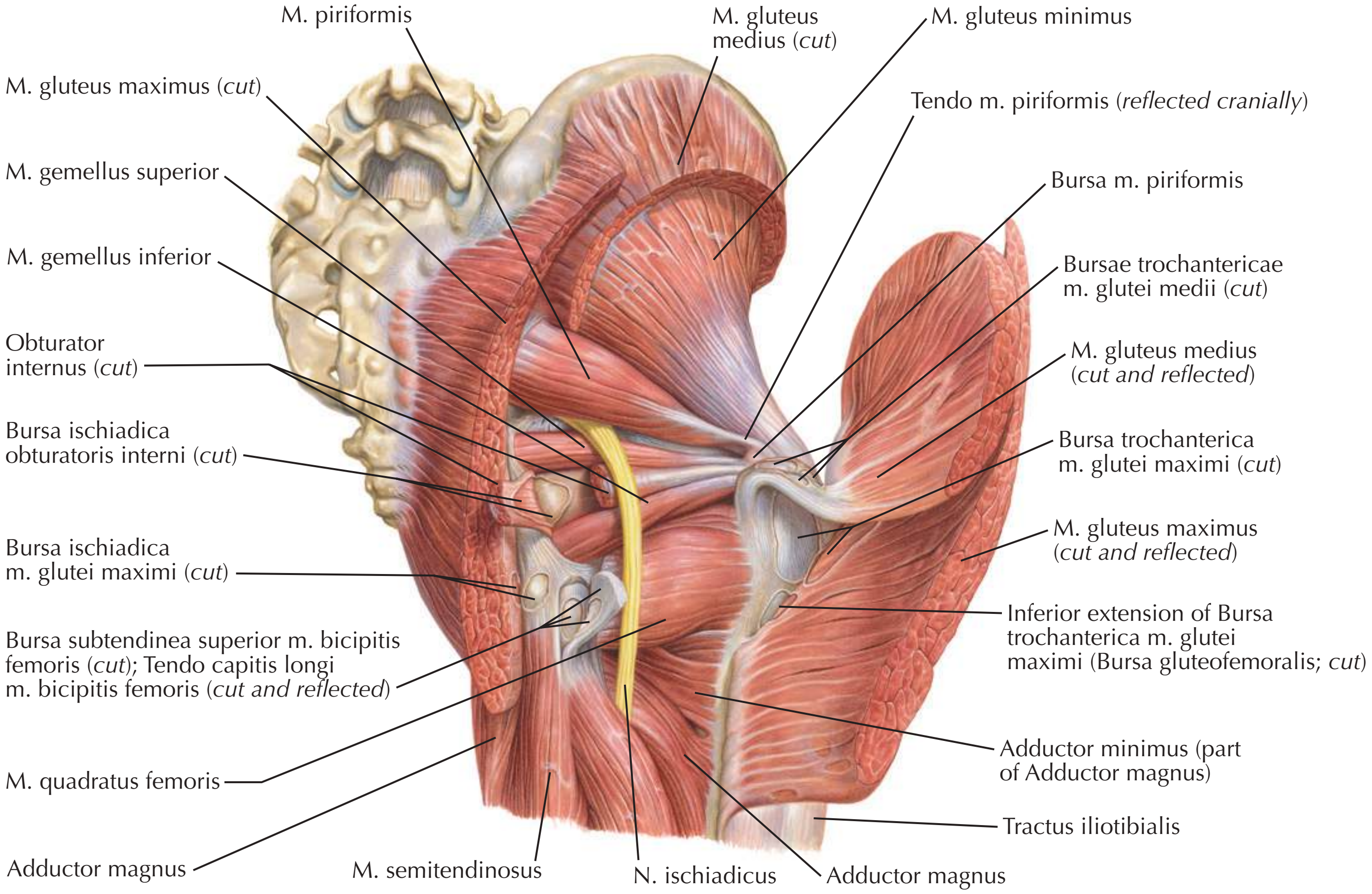
Nerves of Hip and Buttock

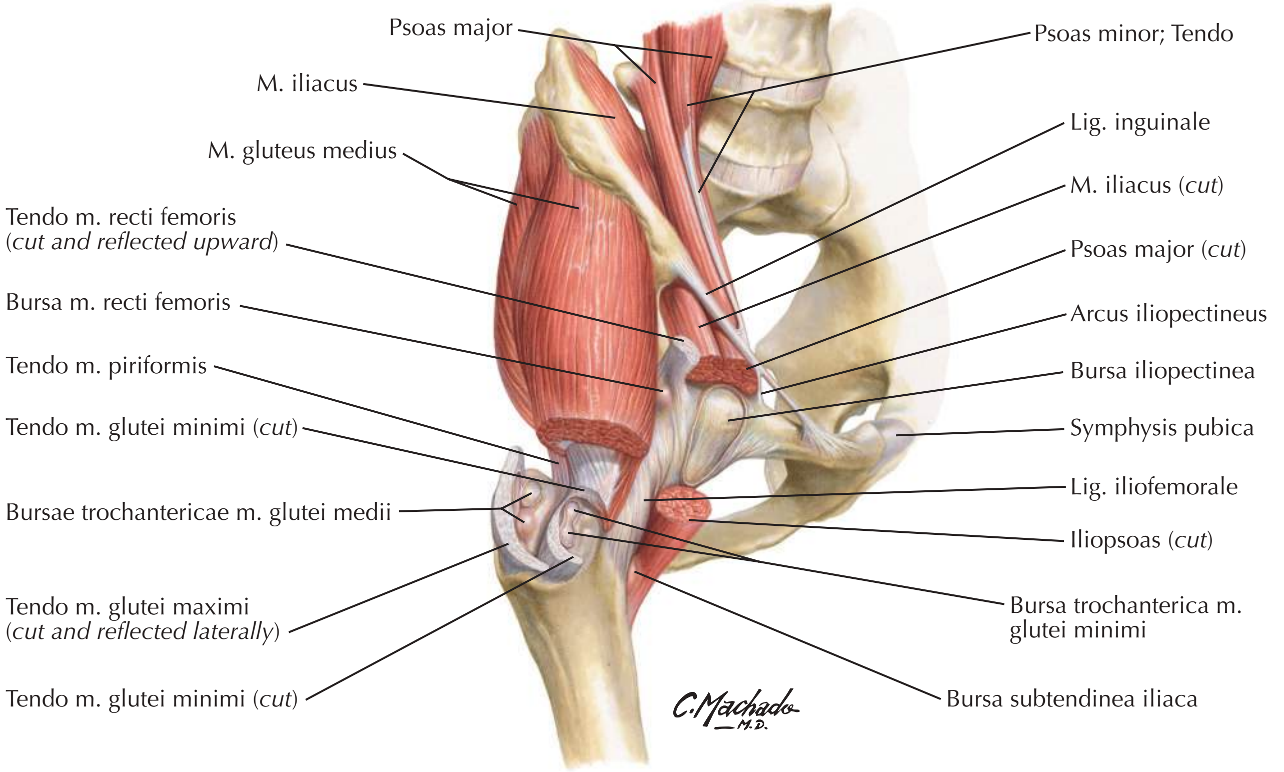
See also Plate 337


M. gluteus maximus (*cut*)
N. gluteus superior
N. ischiadicus (*cut*)
N. gluteus inferior
N. cutaneus posterior femoris (*cut*)
N. obturatoris interni (also to M. gemellus superior)
N. pudendalis
Spina ischiadica
Lig. sacrospinale
N. cutaneus perforans
Lig. sacrotuberale
N. analis inferior (N. rectalis inferior)
N. dorsalis penis
N. perinealis
N. scrotalis posterior
Rr. perineales n. cutanei posterior femoris
Tuber ischiadicum
M. semitendinosus
Caput longum m. bicipitis femoris (covers M. semimembranosus)
Crista iliaca
M. gluteus medius (*cut*)
M. gluteus minimus
M. piriformis
M. gemellus superior
Tensor fasciae latae
M. gluteus medius (*cut*)
Obturator internus
N. m. quadrati femoris (also to M. gemellus inferior, and supplying R. articularis to hip joint)
Trochanter major
Crista intertrochanterica
M. gemellus inferior
M. quadratus femoris
M. gluteus maximus (*cut*)
N. ischiadicus (*cut*)
N. cutaneus posterior femoris (*cut*)
Nn. inferiores clunium (*cut*)

F. Netter M.D.

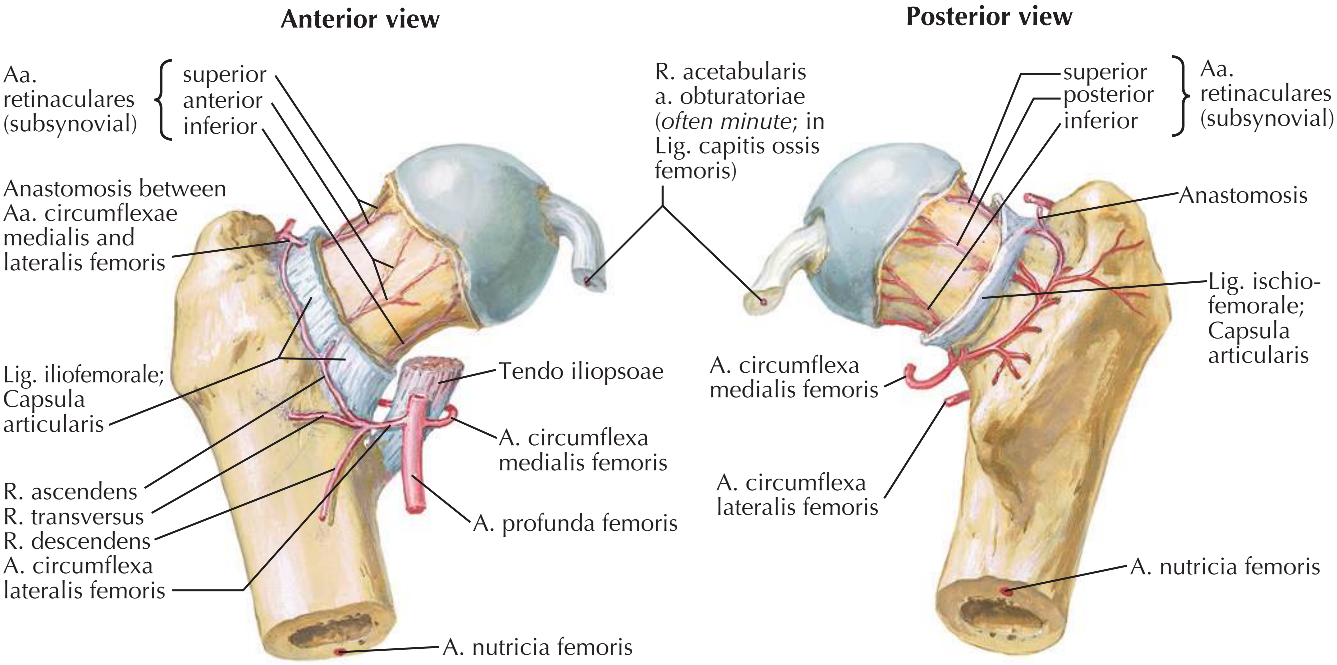
Hip Bursae: Posterior and Anterolateral Views


M. piriformis
M. gluteus medius (cut)
M. gluteus minimus
M. gluteus maximus (cut)
Tendo m. piriformis (reflected cranially)
M. gemellus superior
Bursa m. piriformis
M. gemellus inferior
Bursae trochantericae m. glutei medii (cut)
Obturator internus (cut)
M. gluteus medius (cut and reflected)
Bursa ischiadica obturatoris interni (cut)
Bursa trochanterica m. glutei maximi (cut)
M. gluteus maximus (cut and reflected)
Bursa ischiadica m. glutei maximi (cut)
Inferior extension of Bursa trochanterica m. glutei maximi (Bursa gluteofemoralis; cut)
Bursa subtendinea superior m. bicipitis femoris (cut); Tendo capitis longi m. bicipitis femoris (cut and reflected)
Adductor minimus (part of Adductor magnus)
M. quadratus femoris
Tractus iliotibialis
Adductor magnus
M. semitendinosus
N. ischiadicus
Adductor magnus

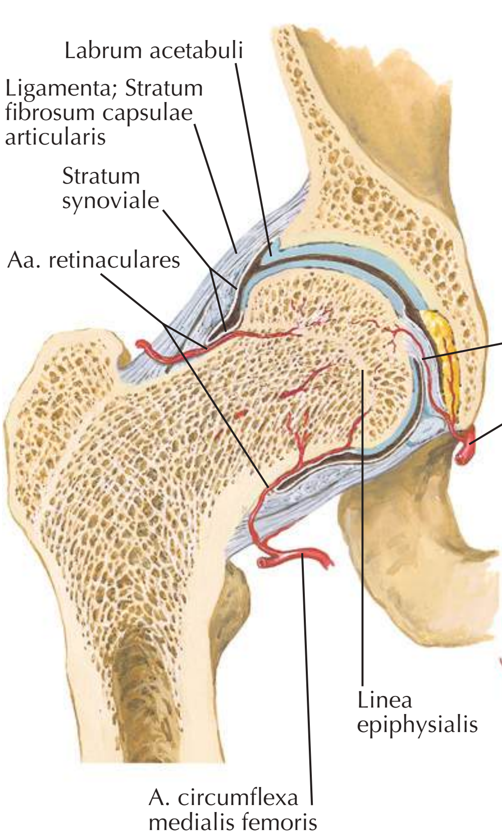

Psoas major
Psoas minor; Tendo
M. iliacus
Lig. inguinale
M. gluteus medius
M. iliacus (cut)
Tendo m. recti femoris (cut and reflected upward)
Psoas major (cut)
Bursa m. recti femoris
Arcus iliopectineus
Tendo m. piriformis
Bursa iliopectinea
Tendo m. glutei minimi (cut)
Symphysis pubica
Lig. iliofemorale
Bursae trochantericae m. glutei medii
Iliopsoas (cut)
Tendo m. glutei maximi (cut and reflected laterally)
Bursa trochanterica m. glutei minimi
Tendo m. glutei minimi (cut)
Bursa subtendinea iliaca

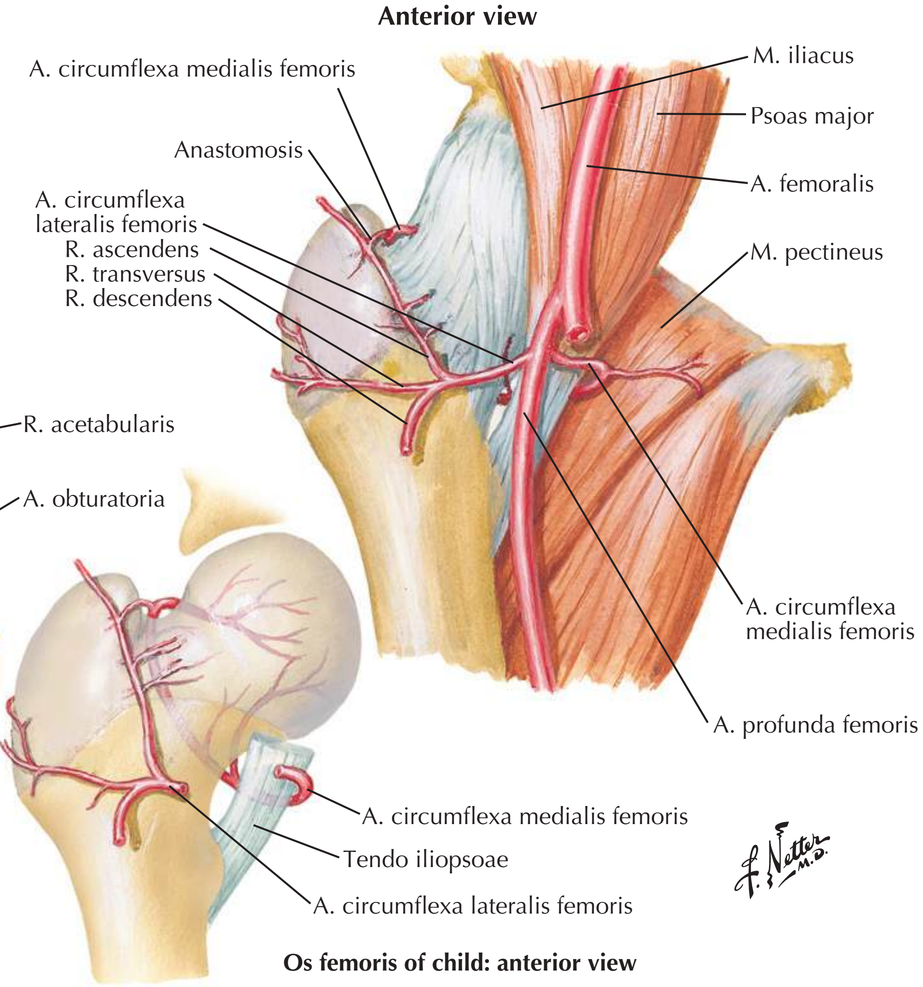
Arteries of Femoral Head and Neck

See also Plates 477, 503

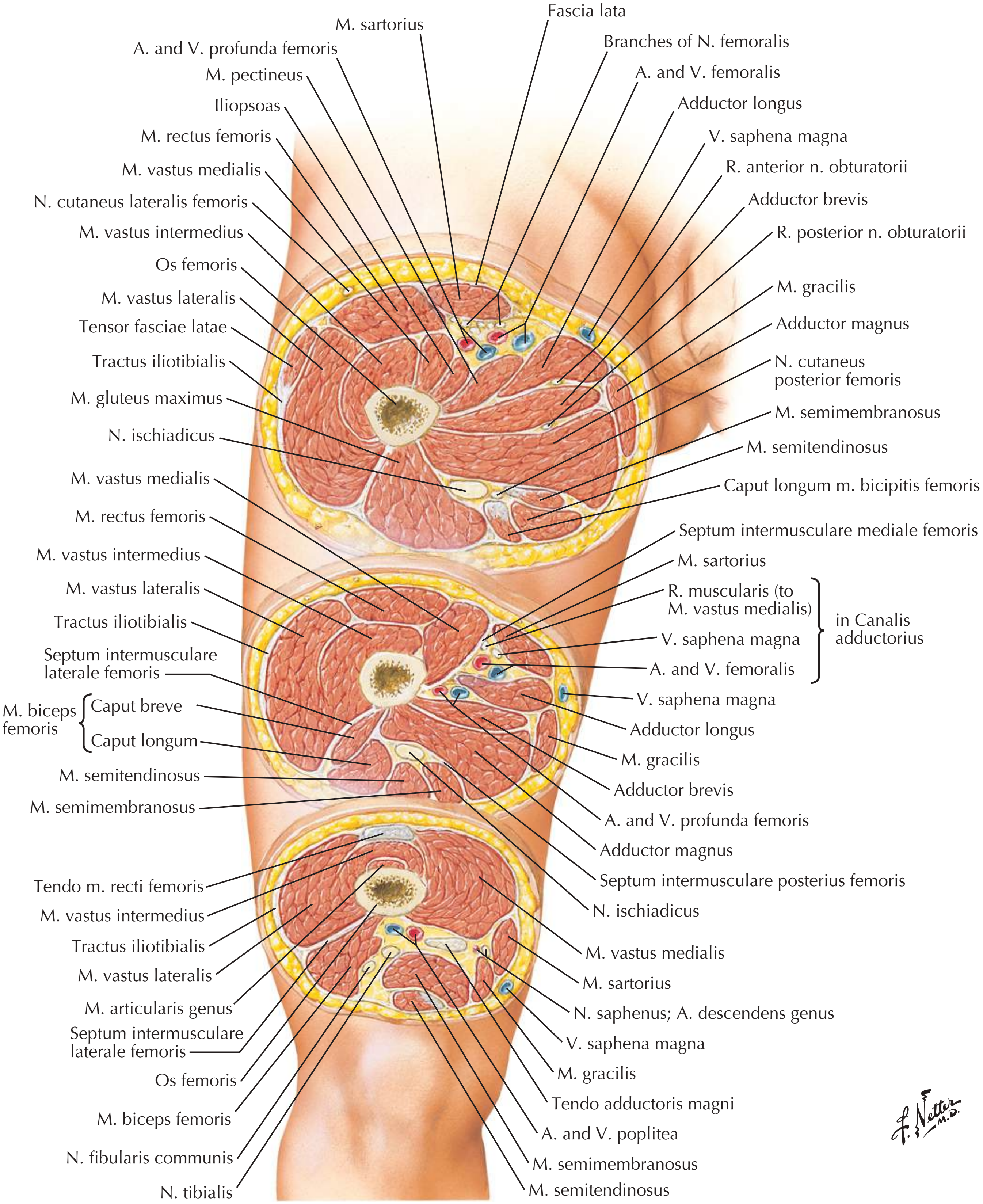

Anterior view
Aa. retinaculares (subsynovial)
superior
anterior
inferior
Anastomosis between Aa. circumflexae medialis and lateralis femoris
Lig. iliofemorale; Capsula articularis
R. ascendens
R. transversus
R. descendens
A. circumflexa lateralis femoris
Tendo iliopsoae
A. circumflexa medialis femoris
A. profunda femoris
A. nutricia femoris
R. acetabularis a. obturatoriae (*often minute*; in Lig. capitis ossis femoris)
Posterior view
superior
posterior
inferior
Aa. retinaculares (subsynovial)
Anastomosis
Lig. ischiofemorale; Capsula articularis
A. circumflexa medialis femoris
A. circumflexa lateralis femoris
A. nutricia femoris

Coronal section

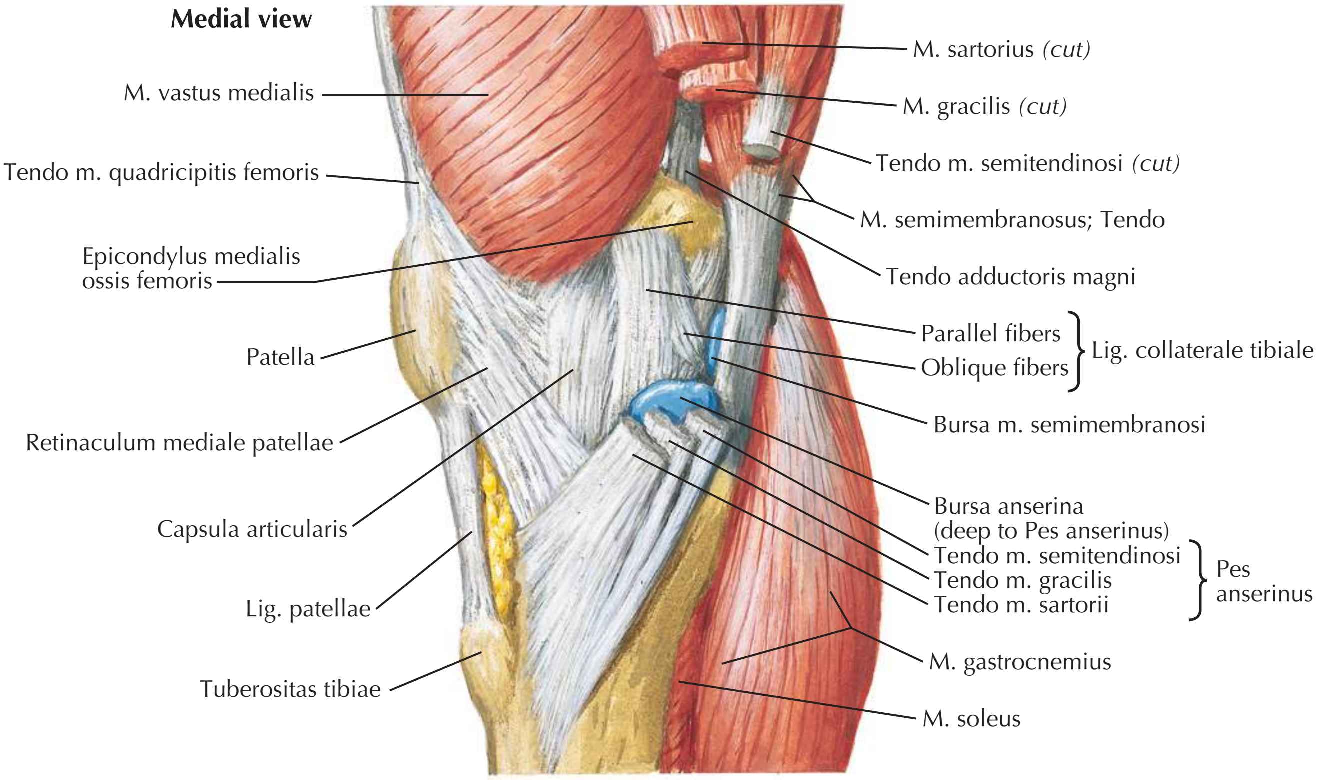

Labrum acetabuli
Ligamenta; Stratum fibrosum capsulae articularis
Stratum synoviale
Aa. retinaculares
R. acetabularis
A. obturatoria
Linea epiphysialis
A. circumflexa medialis femoris


Anterior view
A. circumflexa medialis femoris
Anastomosis
A. circumflexa lateralis femoris
R. ascendens
R. transversus
R. descendens
M. iliacus
Psoas major
A. femoralis
M. pectineus
A. circumflexa medialis femoris
A. profunda femoris
A. circumflexa medialis femoris
Tendo iliopsoae
A. circumflexa lateralis femoris
F. Netter M.D.

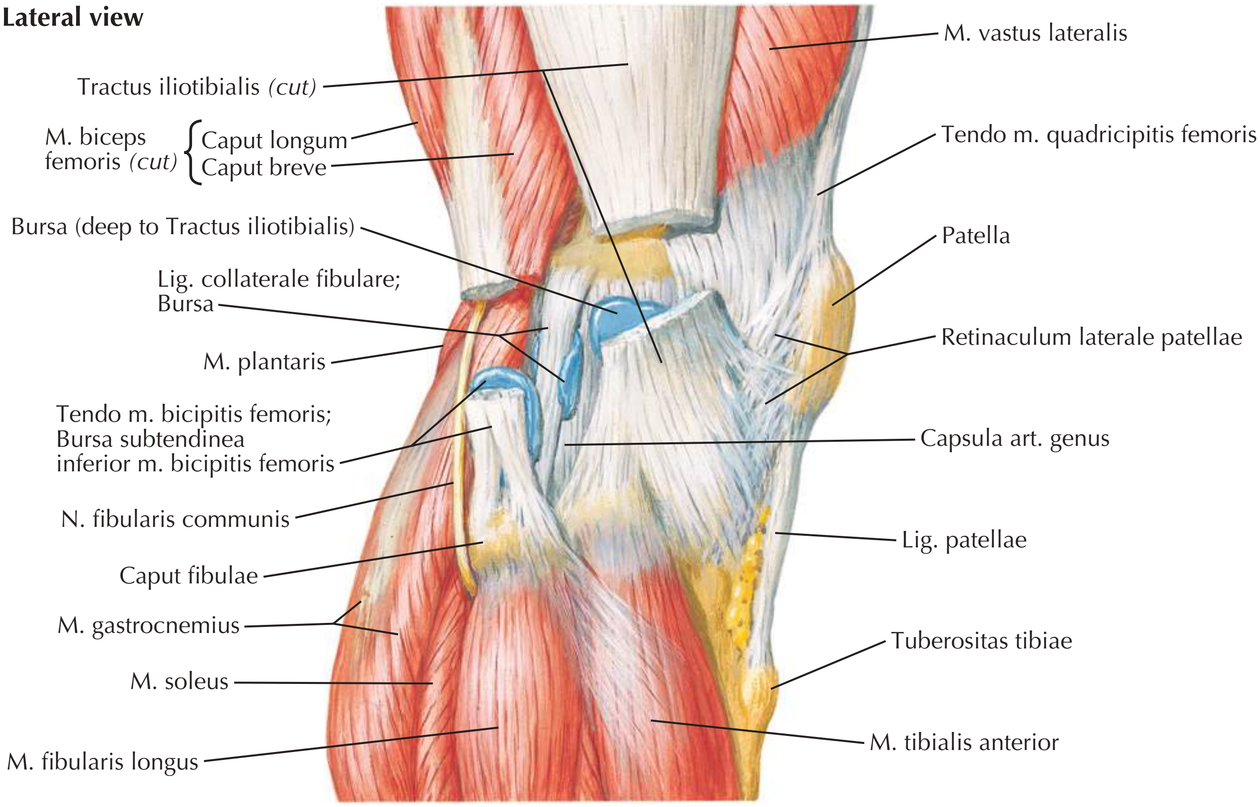
Os femoris of child: anterior view


M. sartorius
A. and V. profunda femoris
M. pectineus
Iliopsoas
M. rectus femoris
M. vastus medialis
N. cutaneus lateralis femoris
M. vastus intermedius
Os femoris
M. vastus lateralis
Tensor fasciae latae
Tractus iliotibialis
M. gluteus maximus
N. ischiadicus
Fascia lata
Branches of N. femoralis
A. and V. femoralis
Adductor longus
V. saphena magna
R. anterior n. obturatorii
Adductor brevis
R. posterior n. obturatorii
M. gracilis
Adductor magnus
N. cutaneus posterior femoris
M. semimembranosus
M. semitendinosus
Caput longum m. bicipitis femoris
M. vastus medialis
M. rectus femoris
M. vastus intermedius
M. vastus lateralis
Tractus iliotibialis
Septum intermusculare laterale femoris
M. biceps femoris
Caput breve
Caput longum
M. semitendinosus
M. semimembranosus
Septum intermusculare mediale femoris
M. sartorius
R. muscularis (to M. vastus medialis)
V. saphena magna
A. and V. femoralis
in Canalis adductorius
V. saphena magna
Adductor longus
M. gracilis
Adductor brevis
A. and V. profunda femoris
Adductor magnus
Septum intermusculare posterius femoris
N. ischiadicus
Tendo m. recti femoris
M. vastus intermedius
Tractus iliotibialis
M. vastus lateralis
M. articularis genus
Septum intermusculare laterale femoris
Os femoris
M. biceps femoris
N. fibularis communis
N. tibialis
M. vastus medialis
M. sartorius
N. saphenus; A. descendens genus
V. saphena magna
M. gracilis
Tendo adductoris magni
A. and V. poplitea
M. semimembranosus
M. semitendinosus

Medial view


M. vastus medialis
Tendo m. quadricipitis femoris
Epicondylus medialis ossis femoris
Patella
Retinaculum mediale patellae
Capsula articularis
Lig. patellae
Tuberositas tibiae
M. sartorius *(cut)*
M. gracilis *(cut)*
Tendo m. semitendinosi *(cut)*
M. semimembranosus; Tendo
Tendo adductoris magni
Parallel fibers
Oblique fibers
Lig. collaterale tibiale
Bursa m. semimembranosi
Bursa anserina (deep to Pes anserinus)
Tendo m. semitendinosi
Tendo m. gracilis
Tendo m. sartorii
Pes anserinus
M. gastrocnemius
M. soleus

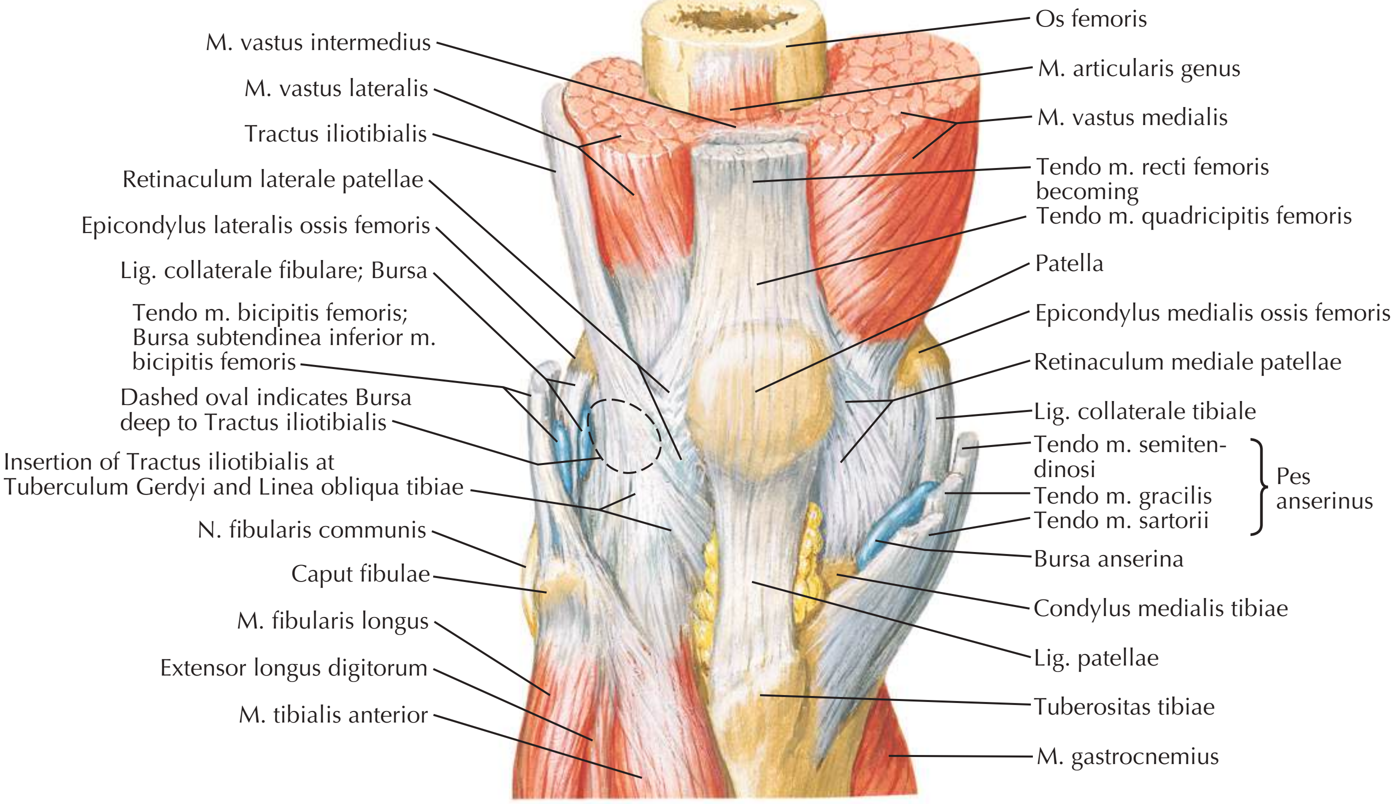
Lateral view


Tractus iliotibialis *(cut)*
M. biceps femoris *(cut)*
Caput longum
Caput breve
Bursa (deep to Tractus iliotibialis)
Lig. collaterale fibulare; Bursa
M. plantaris
Tendo m. bicipitis femoris; Bursa subtendinea inferior m. bicipitis femoris
N. fibularis communis
Caput fibulae
M. gastrocnemius
M. soleus
M. fibularis longus
M. vastus lateralis
Tendo m. quadricipitis femoris
Patella
Retinaculum laterale patellae
Capsula art. genus
Lig. patellae
Tuberositas tibiae
M. tibialis anterior

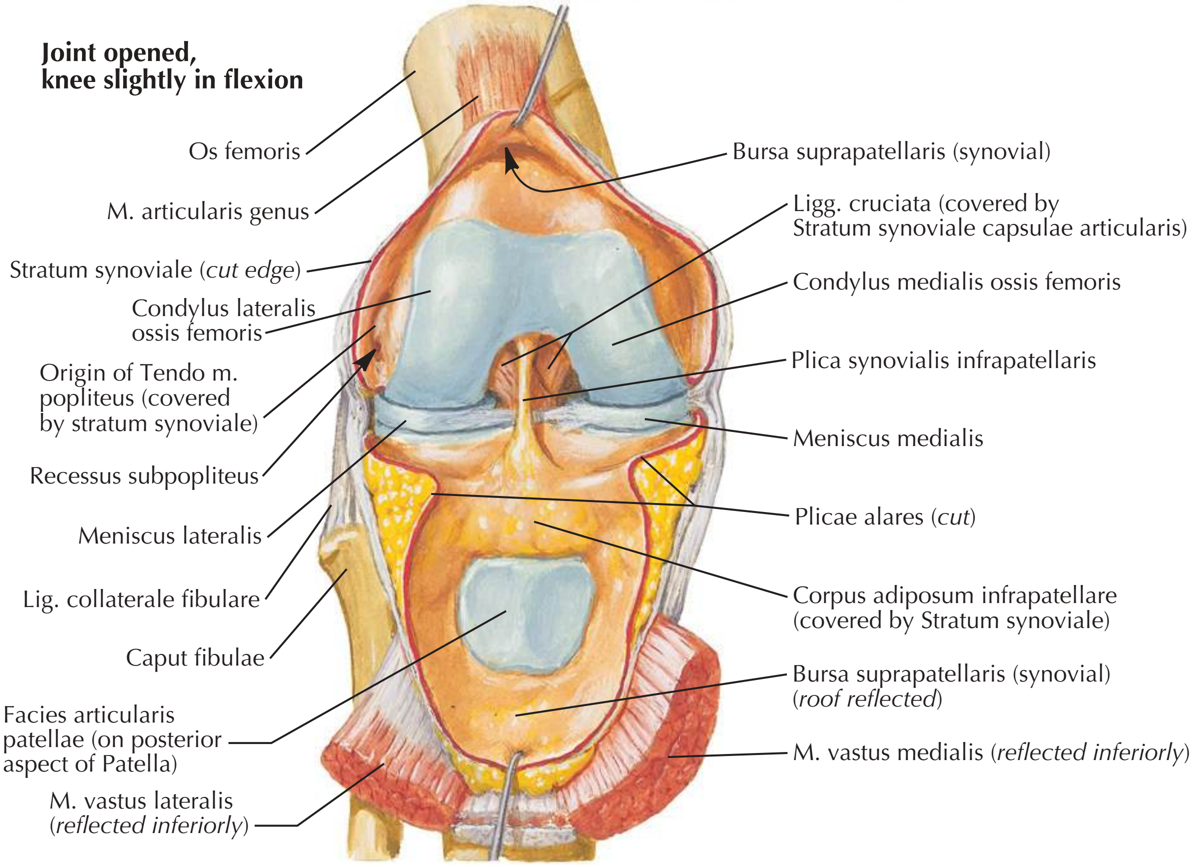
Knee: Anterior Views

See also Plate 501

Right knee in extension


M. vastus intermedius
M. vastus lateralis
Tractus iliotibialis
Retinaculum laterale patellae
Epicondylus lateralis ossis femoris
Lig. collaterale fibulare; Bursa
Tendo m. bicipitis femoris; Bursa subtendinea inferior m. bicipitis femoris
Dashed oval indicates Bursa deep to Tractus iliotibialis
Insertion of Tractus iliotibialis at Tuberculum Gerdyi and Linea obliqua tibiae
N. fibularis communis
Caput fibulae
M. fibularis longus
Extensor longus digitorum
M. tibialis anterior
Os femoris
M. articularis genus
M. vastus medialis
Tendo m. recti femoris becoming Tendo m. quadricipitis femoris
Patella
Epicondylus medialis ossis femoris
Retinaculum mediale patellae
Lig. collaterale tibiale
Tendo m. semitendinosi
Tendo m. gracilis
Tendo m. sartorii
Pes anserinus
Bursa anserina
Condylus medialis tibiae
Lig. patellae
Tuberositas tibiae
M. gastrocnemius

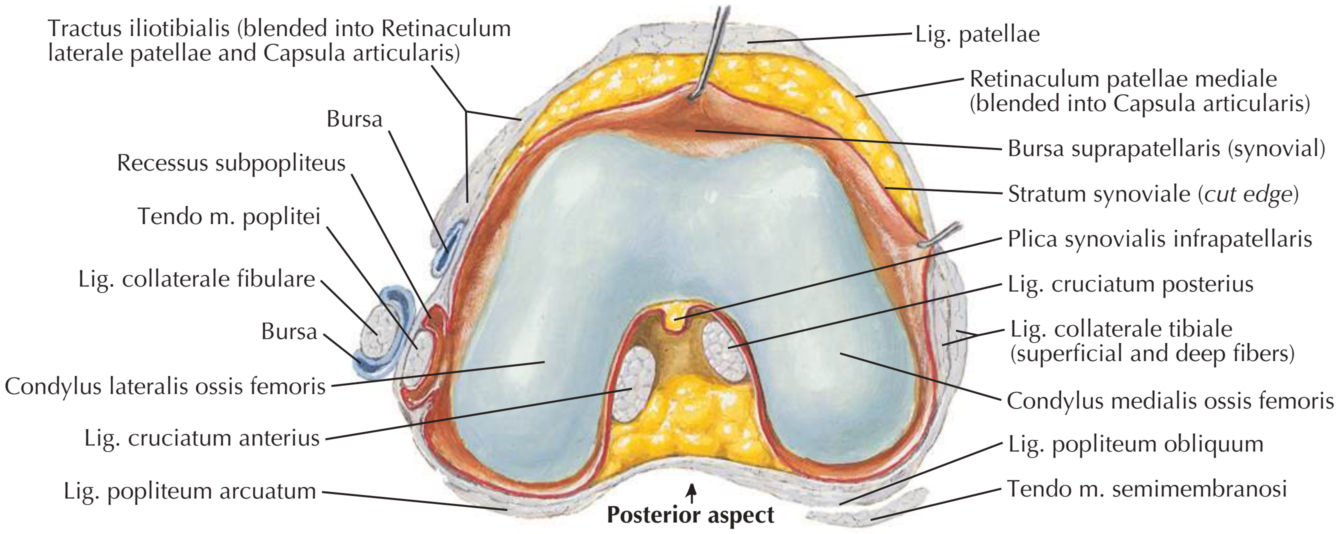
Joint opened, knee slightly in flexion


Os femoris
M. articularis genus
Stratum synoviale (*cut edge*)
Condylus lateralis ossis femoris
Origin of Tendo m. popliteus (covered by stratum synoviale)
Recessus subpopliteus
Meniscus lateralis
Lig. collaterale fibulare
Caput fibulae
Facies articularis patellae (on posterior aspect of Patella)
M. vastus lateralis (*reflected inferiorly*)
Bursa suprapatellaris (synovial)
Ligg. cruciata (covered by Stratum synoviale capsulae articularis)
Condylus medialis ossis femoris
Plica synovialis infrapatellaris
Meniscus medialis
Plicae alares (*cut*)
Corpus adiposum infrapatellare (covered by Stratum synoviale)
Bursa suprapatellaris (synovial) (*roof reflected*)
M. vastus medialis (*reflected inferiorly*)

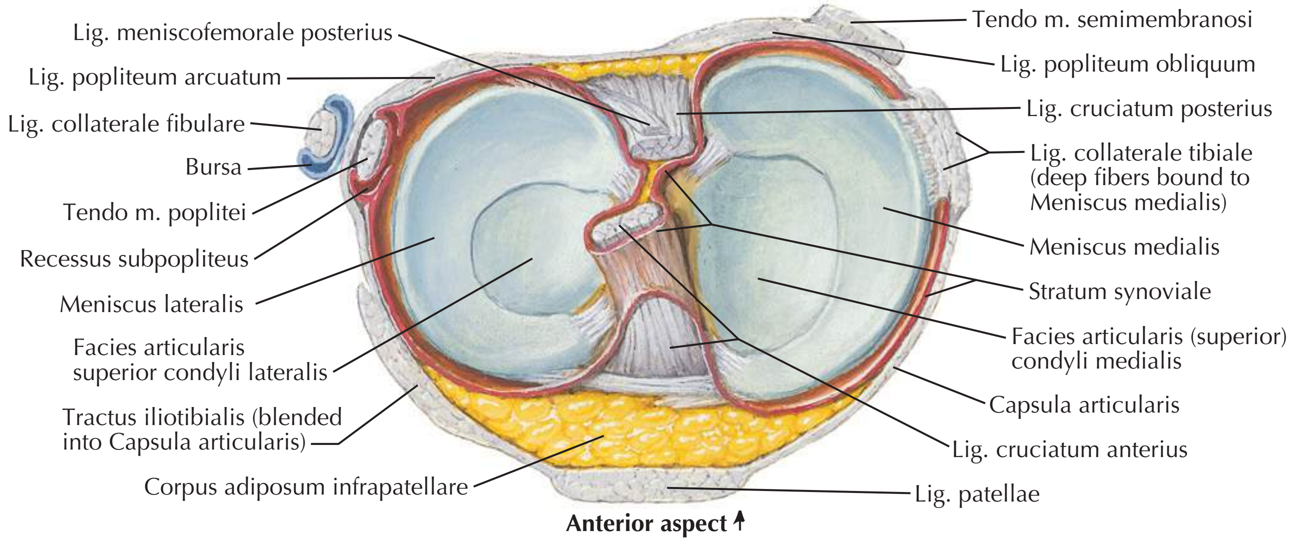
Knee: Interior Views

See also Plate 505

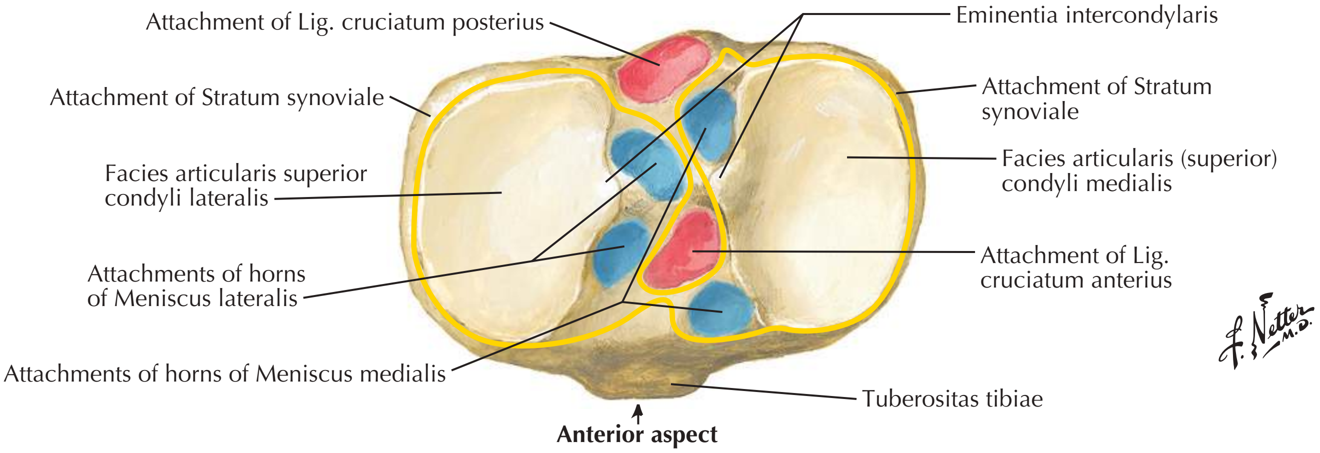
Inferior view


Tractus iliotibialis (blended into Retinaculum laterale patellae and Capsula articularis)
Bursa
Recessus subpopliteus
Tendo m. poplitei
Lig. collaterale fibulare
Bursa
Condylus lateralis ossis femoris
Lig. cruciatum anterius
Lig. popliteum arcuatum
Posterior aspect
Lig. patellae
Retinaculum patellae mediale (blended into Capsula articularis)
Bursa suprapatellaris (synovial)
Stratum synoviale (*cut edge*)
Plica synovialis infrapatellaris
Lig. cruciatum posterius
Lig. collaterale tibiale (superficial and deep fibers)
Condylus medialis ossis femoris
Lig. popliteum obliquum
Tendo m. semimembranosi

Superior view

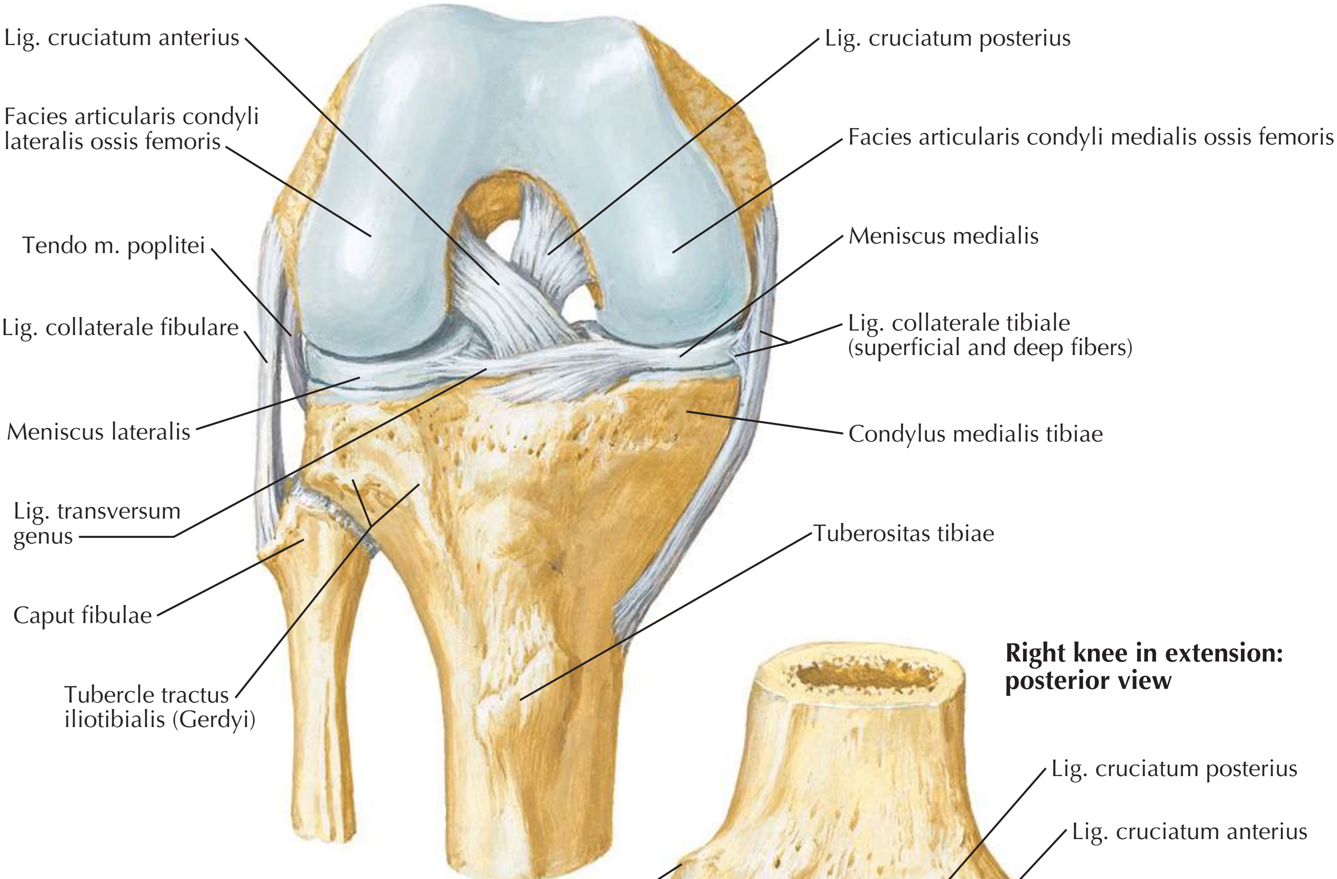

Lig. meniscofemorale posterius
Lig. popliteum arcuatum
Lig. collaterale fibulare
Bursa
Tendo m. poplitei
Recessus subpopliteus
Meniscus lateralis
Facies articularis superior condyli lateralis
Tractus iliotibialis (blended into Capsula articularis)
Corpus adiposum infrapatellare
Anterior aspect
Tendo m. semimembranosi
Lig. popliteum obliquum
Lig. cruciatum posterius
Lig. collaterale tibiale (deep fibers bound to Meniscus medialis)
Meniscus medialis
Stratum synoviale
Facies articularis (superior) condyli medialis
Capsula articularis
Lig. cruciatum anterius
Lig. patellae

Superior view: ligaments and cartilage removed

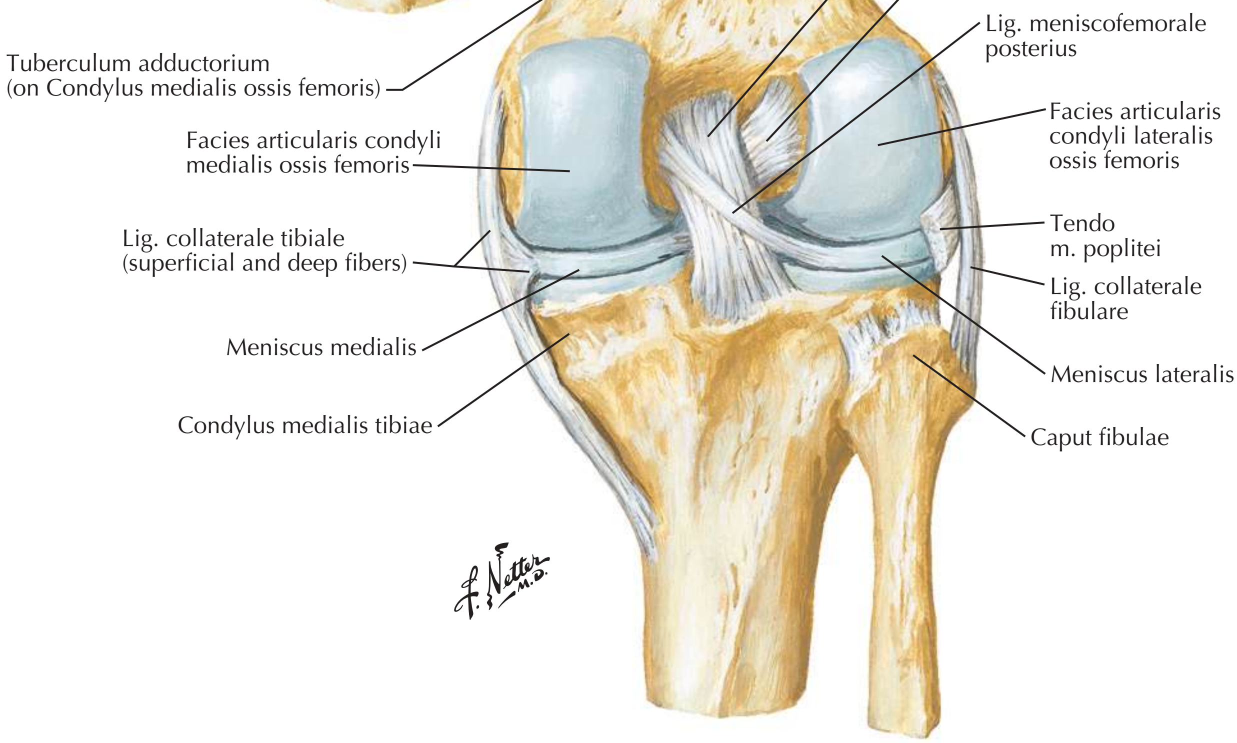

Attachment of Lig. cruciatum posterius
Attachment of Stratum synoviale
Facies articularis superior condyli lateralis
Attachments of horns of Meniscus lateralis
Attachments of horns of Meniscus medialis
Anterior aspect
Eminentia intercondylaris
Attachment of Stratum synoviale
Facies articularis (superior) condyli medialis
Attachment of Lig. cruciatum anterius
Tuberositas tibiae
F. Netter M.D.

Knee: Cruciate and Collateral Ligaments

Right knee in flexion: anterior view

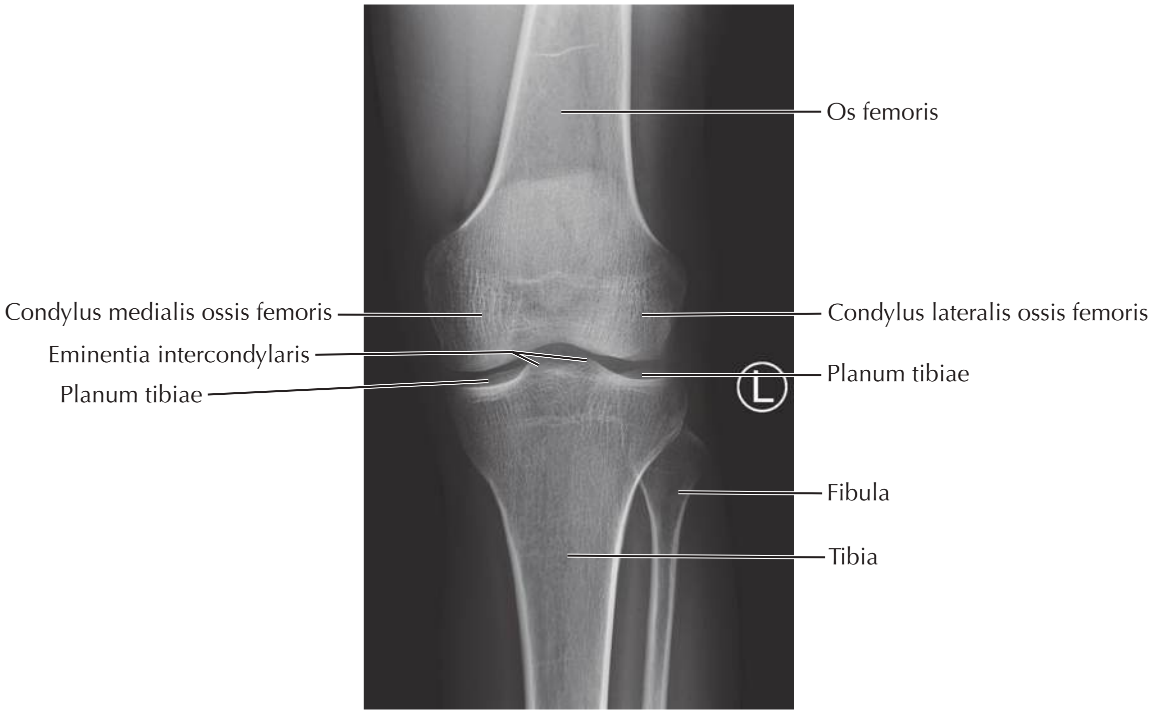

Lig. cruciatum anterius
Facies articularis condyli lateralis ossis femoris
Tendo m. poplitei
Lig. collaterale fibulare
Meniscus lateralis
Lig. transversum genus
Caput fibulae
Tubercle tractus iliotibialis (Gerdyi)
Lig. cruciatum posterius
Facies articularis condyli medialis ossis femoris
Meniscus medialis
Lig. collaterale tibiale (superficial and deep fibers)
Condylus medialis tibiae
Tuberositas tibiae

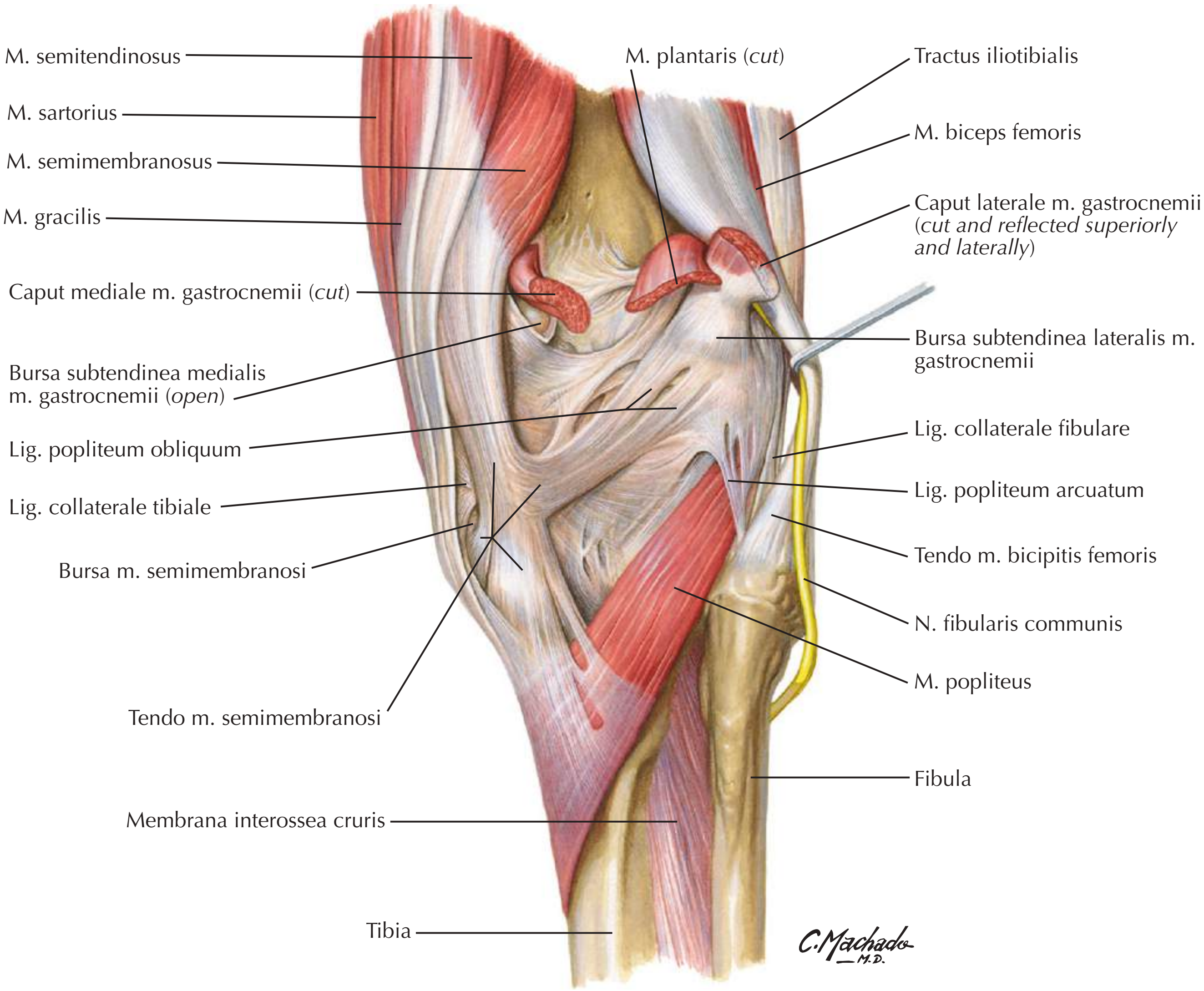
Right knee in extension: posterior view


Lig. cruciatum posterius
Lig. cruciatum anterius
Lig. meniscofemorale posterius
Tuberculum adductorium (on Condylus medialis ossis femoris)
Facies articularis condyli medialis ossis femoris
Facies articularis condyli lateralis ossis femoris
Lig. collaterale tibiale (superficial and deep fibers)
Tendo m. poplitei
Lig. collaterale fibulare
Meniscus medialis
Meniscus lateralis
Condylus medialis tibiae
Caput fibulae

Knee: Anteroposterior Radiograph and Posterior View

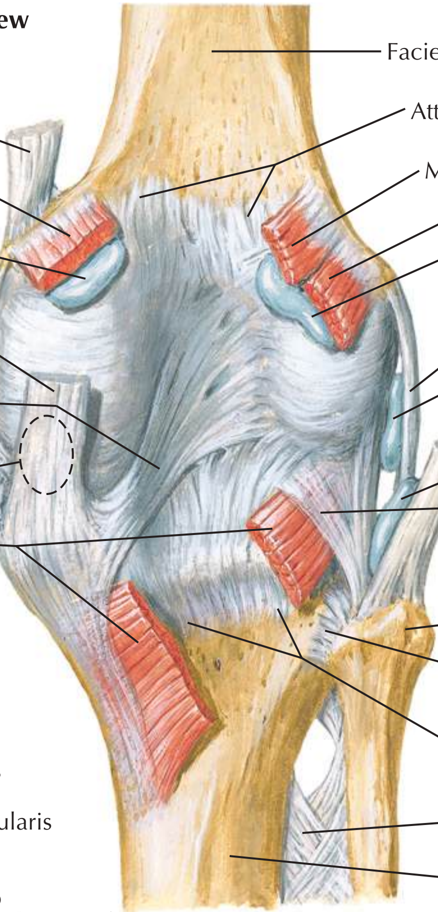
See also Plate 498

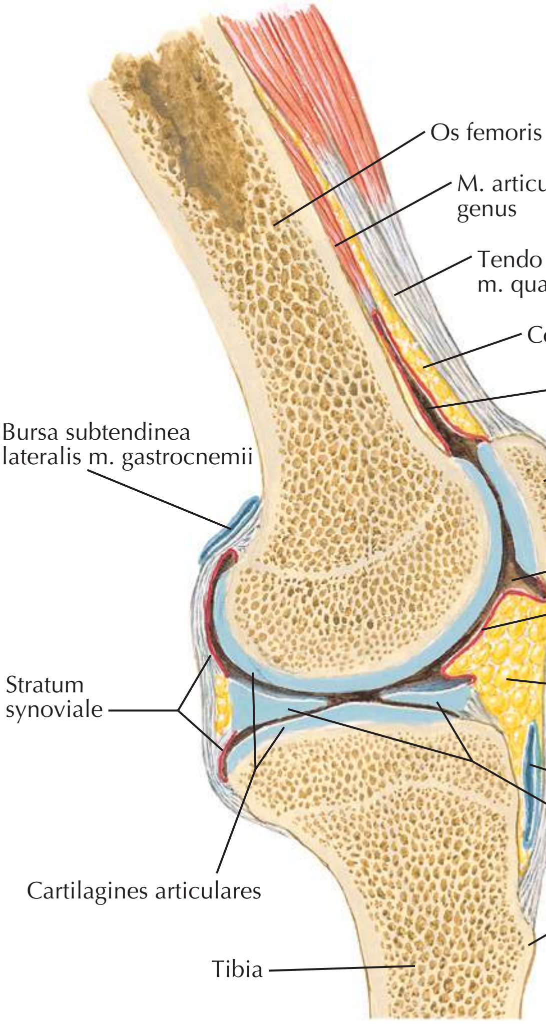

Os femoris
Condylus medialis ossis femoris
Condylus lateralis ossis femoris
Eminentia intercondylaris
Planum tibiae
Planum tibiae
Fibula
Tibia
L


M. semitendinosus
M. plantaris (*cut*)
Tractus iliotibialis
M. sartorius
M. biceps femoris
M. semimembranosus
M. gracilis
Caput laterale m. gastrocnemii (*cut and reflected superiorly and laterally*)
Caput mediale m. gastrocnemii (*cut*)
Bursa subtendinea lateralis m. gastrocnemii
Bursa subtendinea medialis m. gastrocnemii (*open*)
Lig. collaterale fibulare
Lig. popliteum obliquum
Lig. popliteum arcuatum
Lig. collaterale tibiale
Tendo m. bicipitis femoris
Bursa m. semimembranosi
N. fibularis communis
M. popliteus
Tendo m. semimembranosi
Fibula
Membrana interossea cruris
Tibia

Knee: Posterior and Sagittal Views

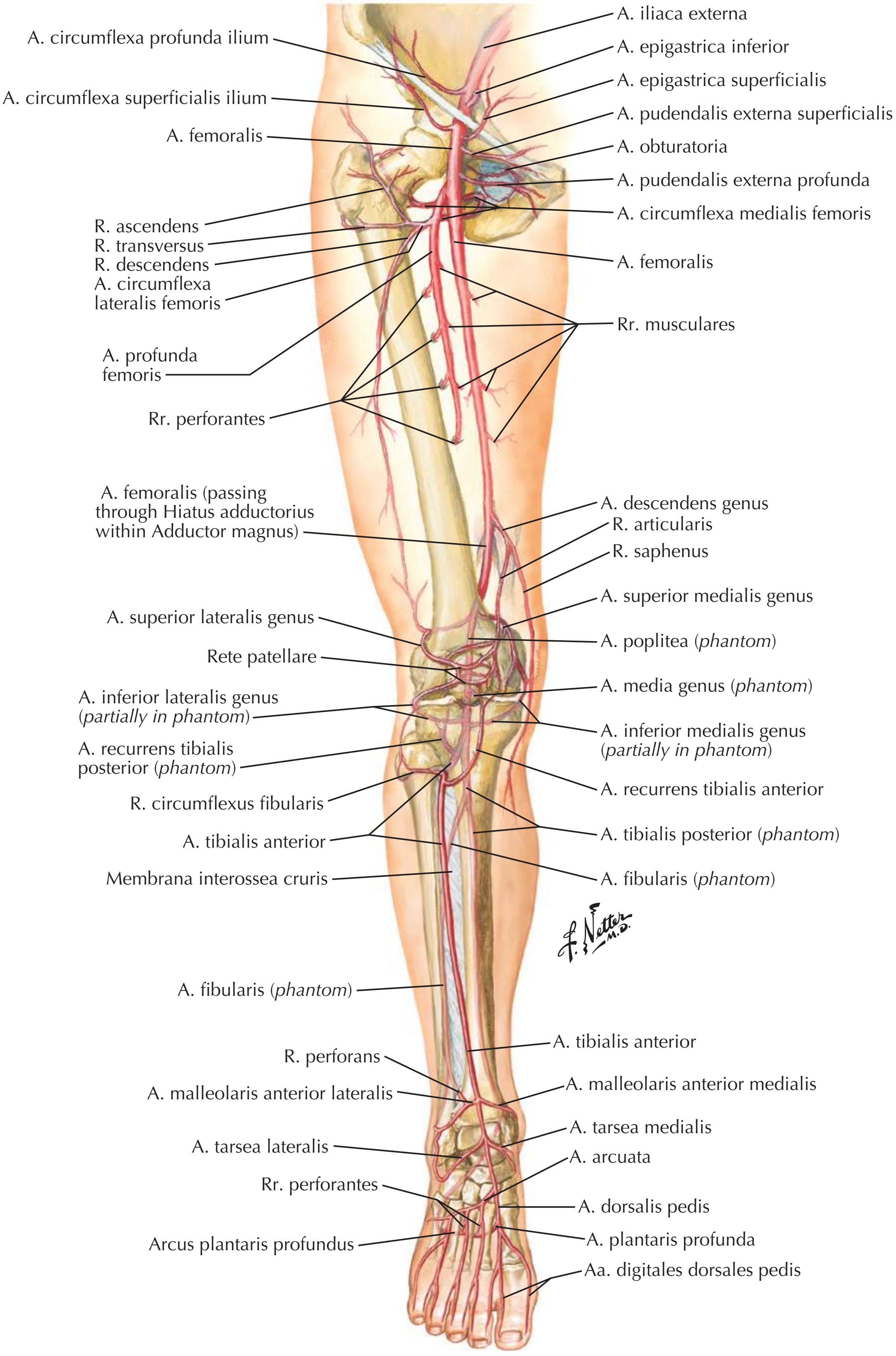
Right knee: posterior view


Facies poplitea ossis femoris
Tendo adductoris magni
Attachment of Capsula articularis
Caput mediale m. gastrocnemii
M. plantaris
Bursa subtendinea medialis m. gastrocnemii
Caput laterale m. gastrocnemii
Bursa subtendinea lateralis m. gastrocnemii
Lig. collaterale mediale
Tendo m. semimembranosi
Lig collaterale fibulare
Lig. popliteum obliquum (expansion of Tendo m. semimembranosi)
Bursa
Tendo m. bicipitis femoris
Bursa subtendinea m. bicipitis femoris
Bursa m. semimembranosi (deep to tendon) (broken line)
Lig. popliteum arcuatum (edge of Capsula articularis that arches over M. popliteus)
M. popliteus
Caput fibulae
Lig. posterius capitis fibulae
Attachment of Capsula articularis
Membrana interossea cruris
Tibia

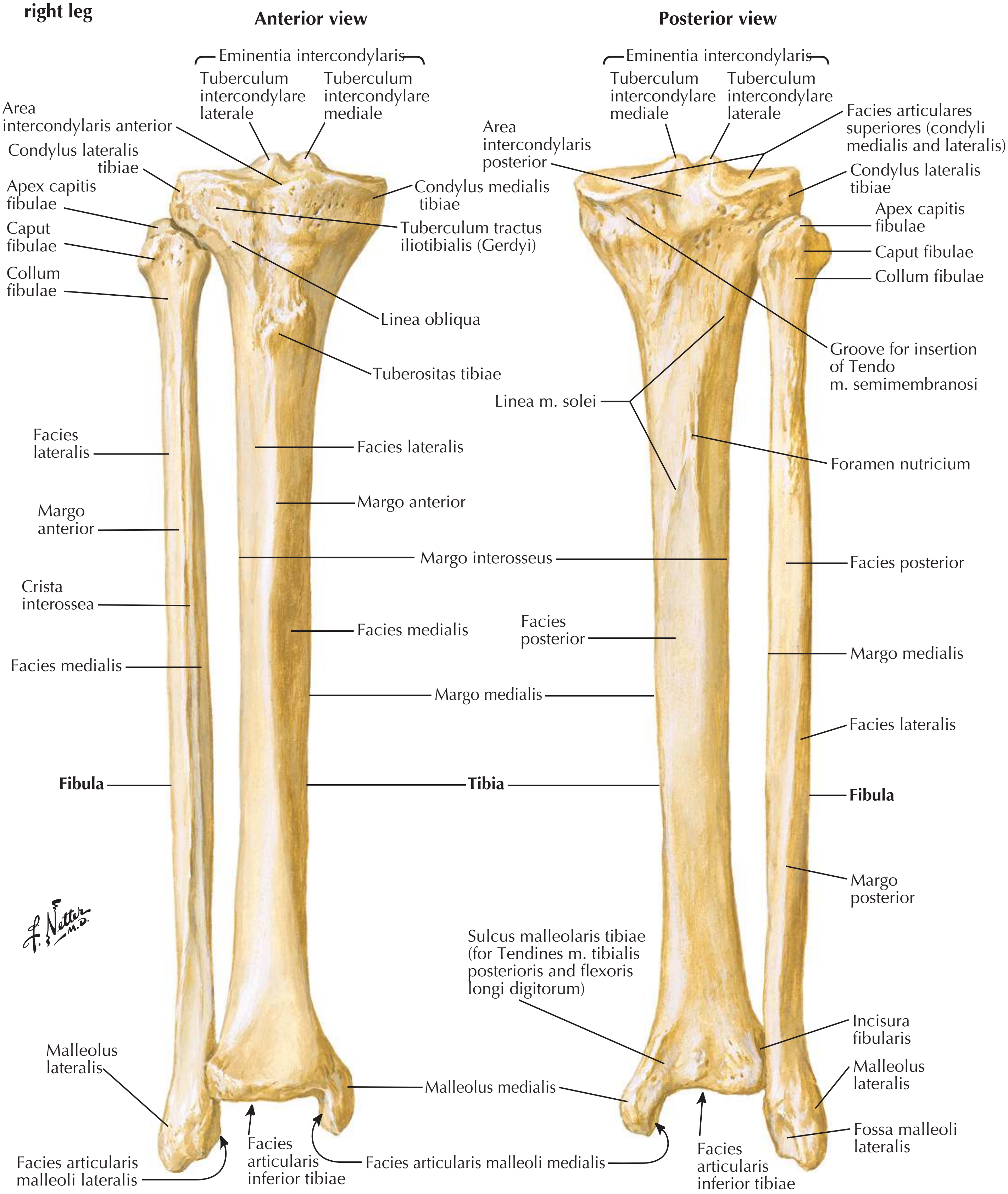

Os femoris
M. articularis genus
Tendo m. quadricipitis femoris
Corpus adiposum suprapatellare
Bursa suprapatellaris (synovial)
Bursa subtendinea lateralis m. gastrocnemii
Patella
Bursa subcutanea prepatellaris
Cavitas art. genus
Stratum synoviale
Lig. patellae
Stratum synoviale
Corpus adiposum infrapatellare
Bursa subcutanea infrapatellaris
Bursa infrapatellaris profunda
Meniscus lateralis
Cartilagines articulares
Tuberositas tibiae
Tibia

Parasagittal section (lateral to midline of knee)

See also Plates 495, 512


A. circumflexa profunda ilium
A. circumflexa superficialis ilium
A. femoralis
R. ascendens
R. transversus
R. descendens
A. circumflexa lateralis femoris
A. profunda femoris
Rr. perforantes
A. femoralis (passing through Hiatus adductorius within Adductor magnus)
A. superior lateralis genus
Rete patellare
A. inferior lateralis genus (*partially in phantom*)
A. recurrens tibialis posterior (*phantom*)
R. circumflexus fibularis
A. tibialis anterior
Membrana interossea cruris
A. fibularis (*phantom*)
R. perforans
A. malleolaris anterior lateralis
A. tarsea lateralis
Rr. perforantes
Arcus plantaris profundus
A. iliaca externa
A. epigastrica inferior
A. epigastrica superficialis
A. pudendalis externa superficialis
A. obturatoria
A. pudendalis externa profunda
A. circumflexa medialis femoris
A. femoralis
Rr. musculares
A. descendens genus
R. articularis
R. saphenus
A. superior medialis genus
A. poplitea (*phantom*)
A. media genus (*phantom*)
A. inferior medialis genus (*partially in phantom*)
A. recurrens tibialis anterior
A. tibialis posterior (*phantom*)
A. fibularis (*phantom*)
A. tibialis anterior
A. malleolaris anterior medialis
A. tarsea medialis
A. arcuata
A. dorsalis pedis
A. plantaris profunda
Aa. digitales dorsales pedis
F. Netter M.D.

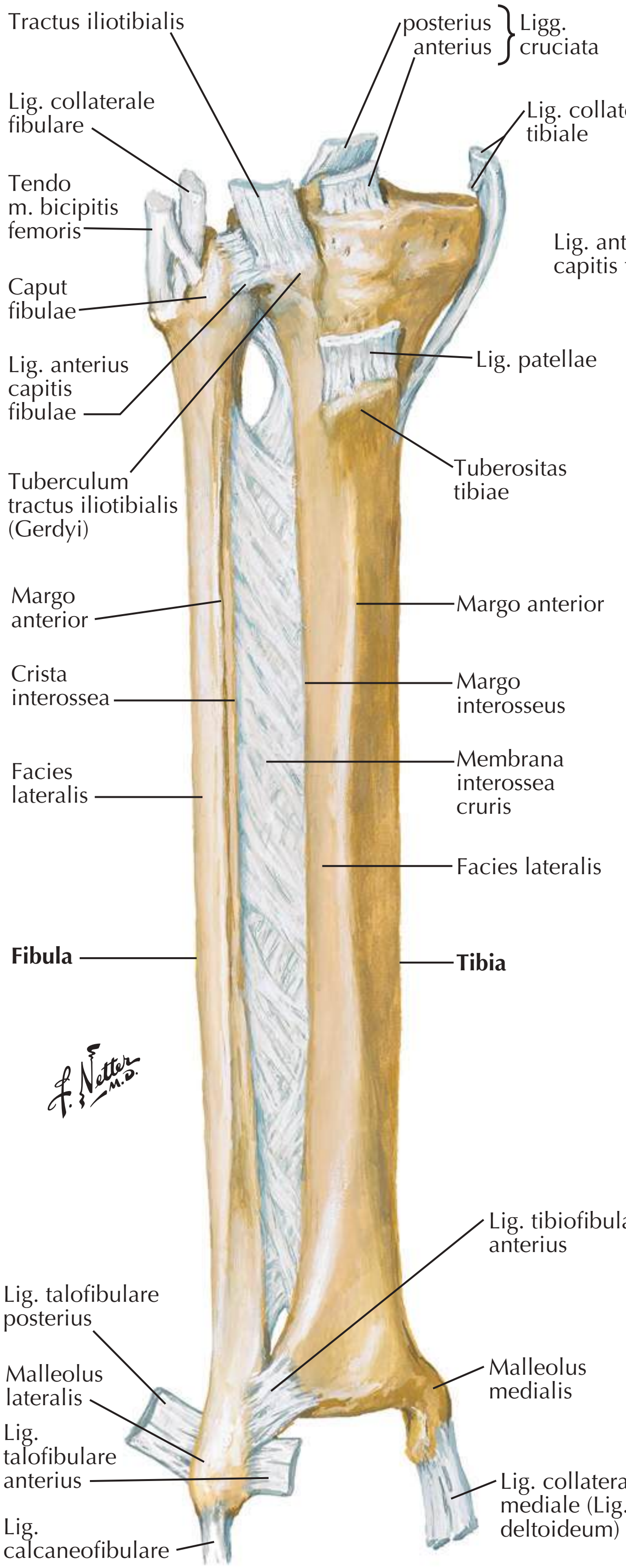
Tibia and Fibula


Bones of right leg

Anterior view
Eminentia intercondylaris
Tuberculum intercondylare laterale
Tuberculum intercondylare mediale
Area intercondylaris anterior
Condylus lateralis tibiae
Apex capitis fibulae
Caput fibulae
Collum fibulae
Condylus medialis tibiae
Tuberculum tractus iliotibialis (Gerdyi)
Linea obliqua
Tuberositas tibiae
Facies lateralis
Facies lateralis
Margo anterior
Margo anterior
Margo interosseus
Crista interossea
Facies medialis
Facies medialis
Margo medialis
Fibula
Tibia
Malleolus lateralis
Malleolus medialis
Facies articularis malleoli lateralis
Facies articularis inferior tibiae
Facies articularis malleoli medialis
Posterior view
Eminentia intercondylaris
Tuberculum intercondylare mediale
Tuberculum intercondylare laterale
Area intercondylaris posterior
Facies articulares superiores (condyli medialis and lateralis)
Condylus lateralis tibiae
Apex capitis fibulae
Caput fibulae
Collum fibulae
Groove for insertion of Tendo m. semimembranosi
Linea m. solei
Foramen nutricium
Facies posterior
Facies posterior
Margo medialis
Facies lateralis
Fibula
Margo posterior
Sulcus malleolaris tibiae (for Tendines m. tibialis posterioris and flexoris longi digitorum)
Incisura fibularis
Malleolus lateralis
Fossa malleoli lateralis
Facies articularis inferior tibiae

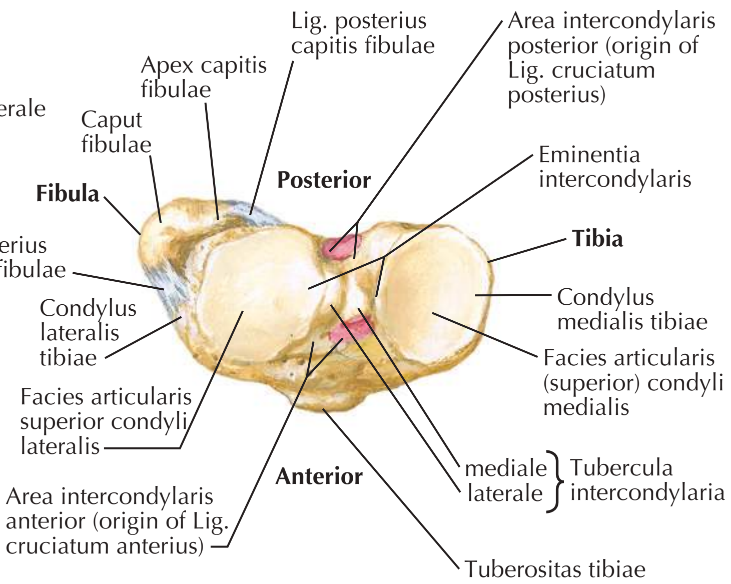
Tibia and Fibula (continued)

See also Plate 499



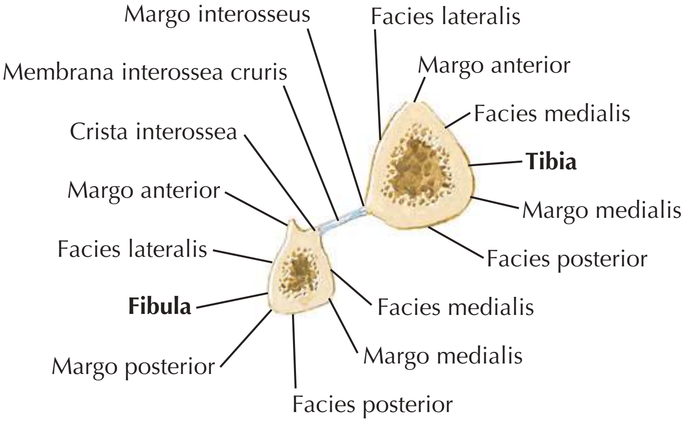
Anterior view with ligament attachments

Tractus iliotibialis
posterius
anterius
Ligg. cruciata
Lig. collaterale fibulare
Lig. collaterale tibiale
Tendo m. bicipitis femoris
Caput fibulae
Lig. patellae
Lig. anterius capitis fibulae
Tuberositas tibiae
Tuberculum tractus iliotibialis (Gerdyi)
Margo anterior
Margo anterior
Crista interossea
Margo interosseus
Membrana interossea cruris
Facies lateralis
Facies lateralis
Fibula
Tibia
F. Netter M.D.
Lig. tibiofibulare anterius
Lig. talofibulare posterius
Malleolus lateralis
Malleolus medialis
Lig. talofibulare anterius
Lig. collaterale mediale (Lig. deltoideum)
Lig. calcaneofibulare



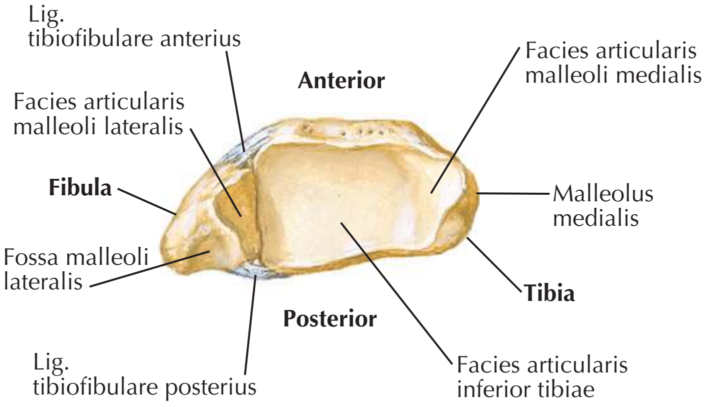
Superior view

Lig. posterius capitis fibulae
Area intercondylaris posterior (origin of Lig. cruciatum posterius)
Apex capitis fibulae
Caput fibulae
Fibula
Posterior
Eminentia intercondylaris
Tibia
Lig. anterius capitis fibulae
Condylus medialis tibiae
Condylus lateralis tibiae
Facies articularis (superior) condyli medialis
Facies articularis superior condyli lateralis
mediale
laterale
Tubercula intercondylaria
Anterior
Area intercondylaris anterior (origin of Lig. cruciatum anterius)
Tuberositas tibiae



Cross section

Margo interosseus
Facies lateralis
Membrana interossea cruris
Margo anterior
Facies medialis
Crista interossea
Tibia
Margo anterior
Margo medialis
Facies lateralis
Facies posterior
Fibula
Facies medialis
Margo posterior
Margo medialis
Facies posterior

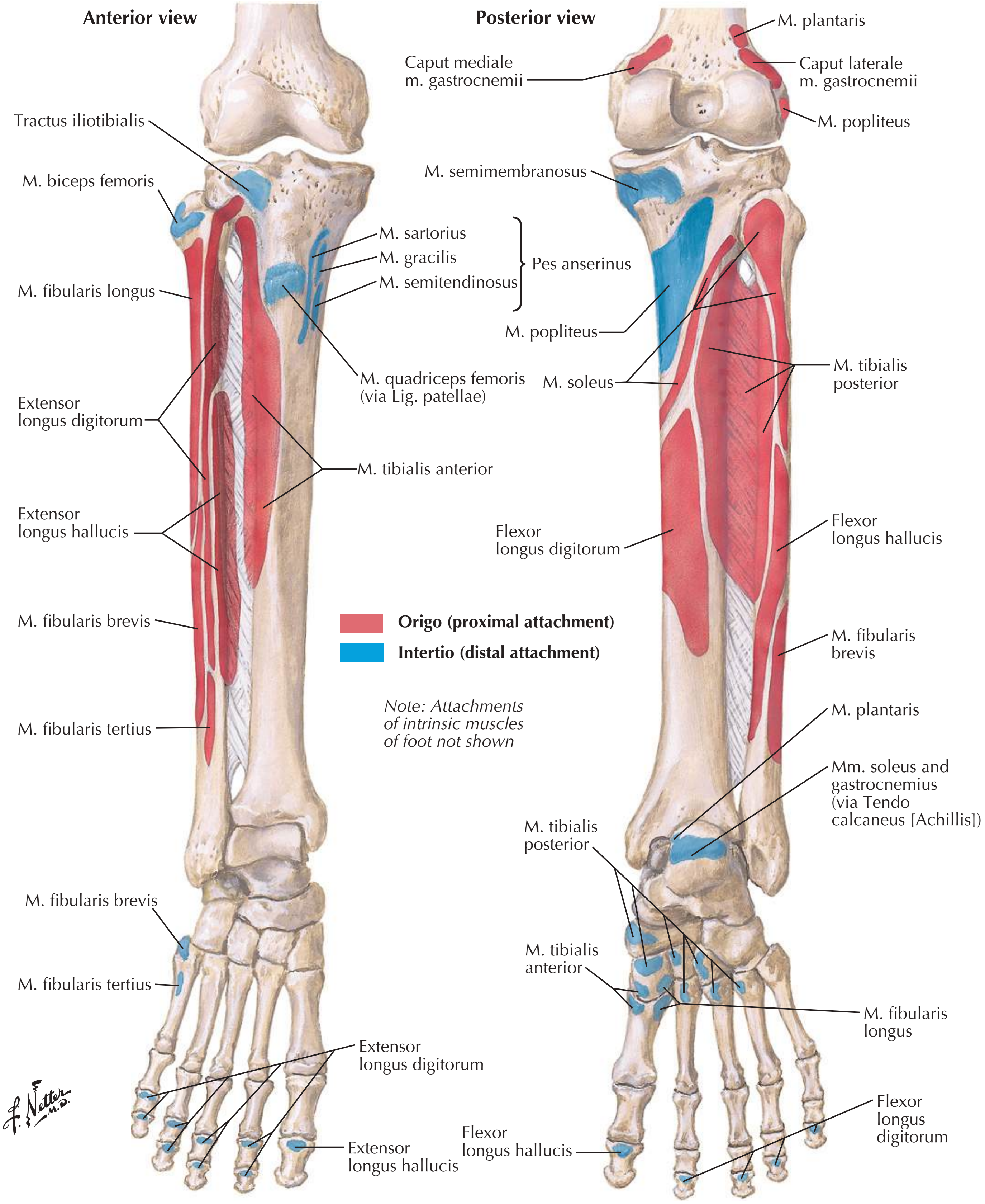


Inferior view

Lig. tibiofibulare anterius
Anterior
Facies articularis malleoli medialis
Facies articularis malleoli lateralis
Fibula
Malleolus medialis
Fossa malleoli lateralis
Tibia
Posterior
Lig. tibiofibulare posterius
Facies articularis inferior tibiae

Attachments of Muscles of Leg

See also Plates 509, 512


Anterior view
Tractus iliotibialis
M. biceps femoris
M. fibularis longus
Extensor longus digitorum
Extensor longus hallucis
M. fibularis brevis
M. fibularis tertius
M. fibularis brevis
M. fibularis tertius
M. sartorius
M. gracilis
M. semitendinosus
Pes anserinus
M. quadriceps femoris (via Lig. patellae)
M. tibialis anterior
Extensor longus digitorum
Extensor longus hallucis
Posterior view
Caput mediale m. gastrocnemii
M. plantaris
Caput laterale m. gastrocnemii
M. popliteus
M. semimembranosus
M. popliteus
M. soleus
M. tibialis posterior
Flexor longus digitorum
Flexor longus hallucis
M. fibularis brevis
M. plantaris
Mm. soleus and gastrocnemius (via Tendo calcaneus [Achillis])
M. tibialis posterior
M. tibialis anterior
M. fibularis longus
Flexor longus hallucis
Flexor longus digitorum

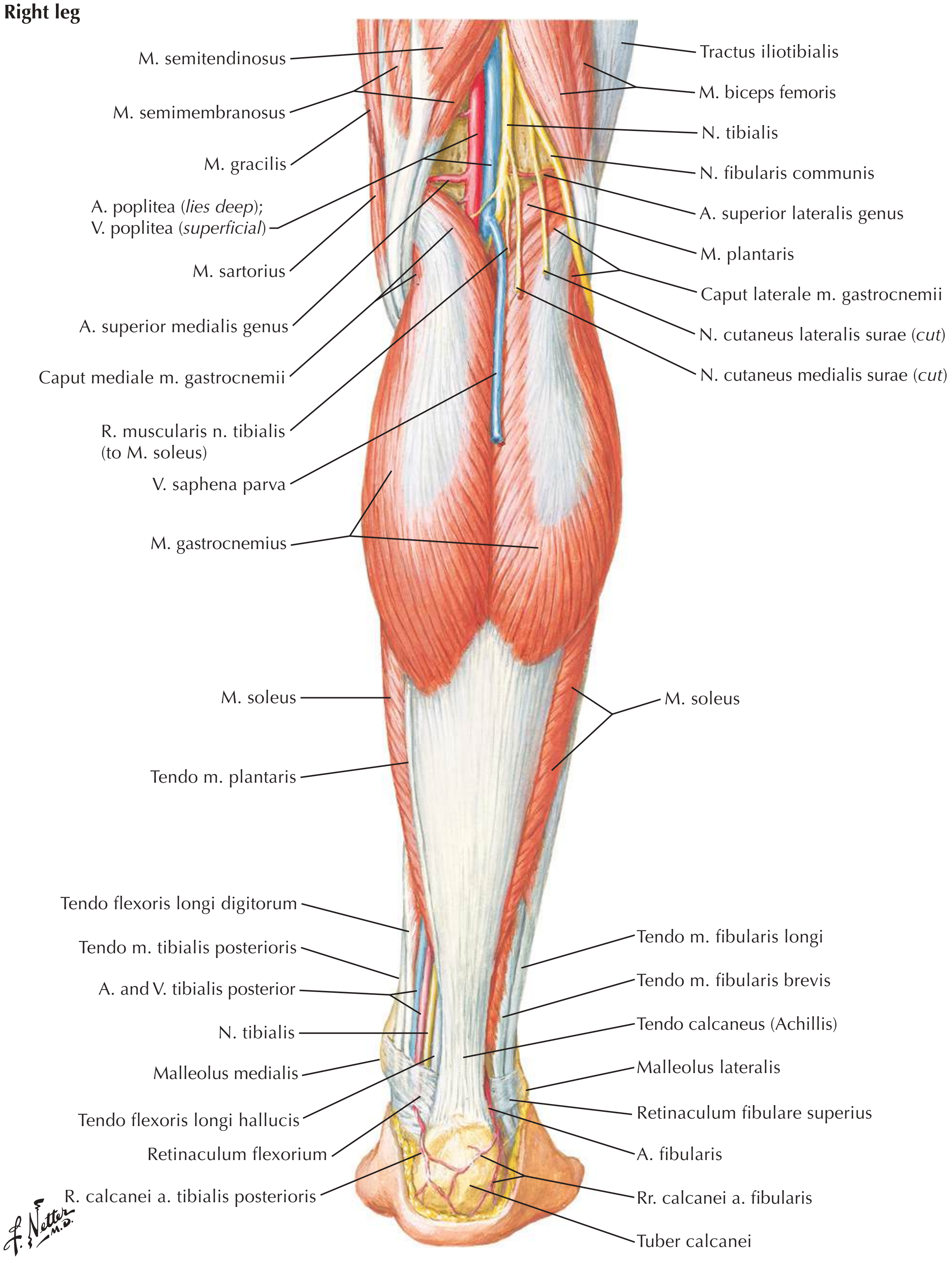
🟥 **Origo (proximal attachment)**

🟦 **Intertio (distal attachment)**

Note: Attachments of intrinsic muscles of foot not shown

See also Plate 532

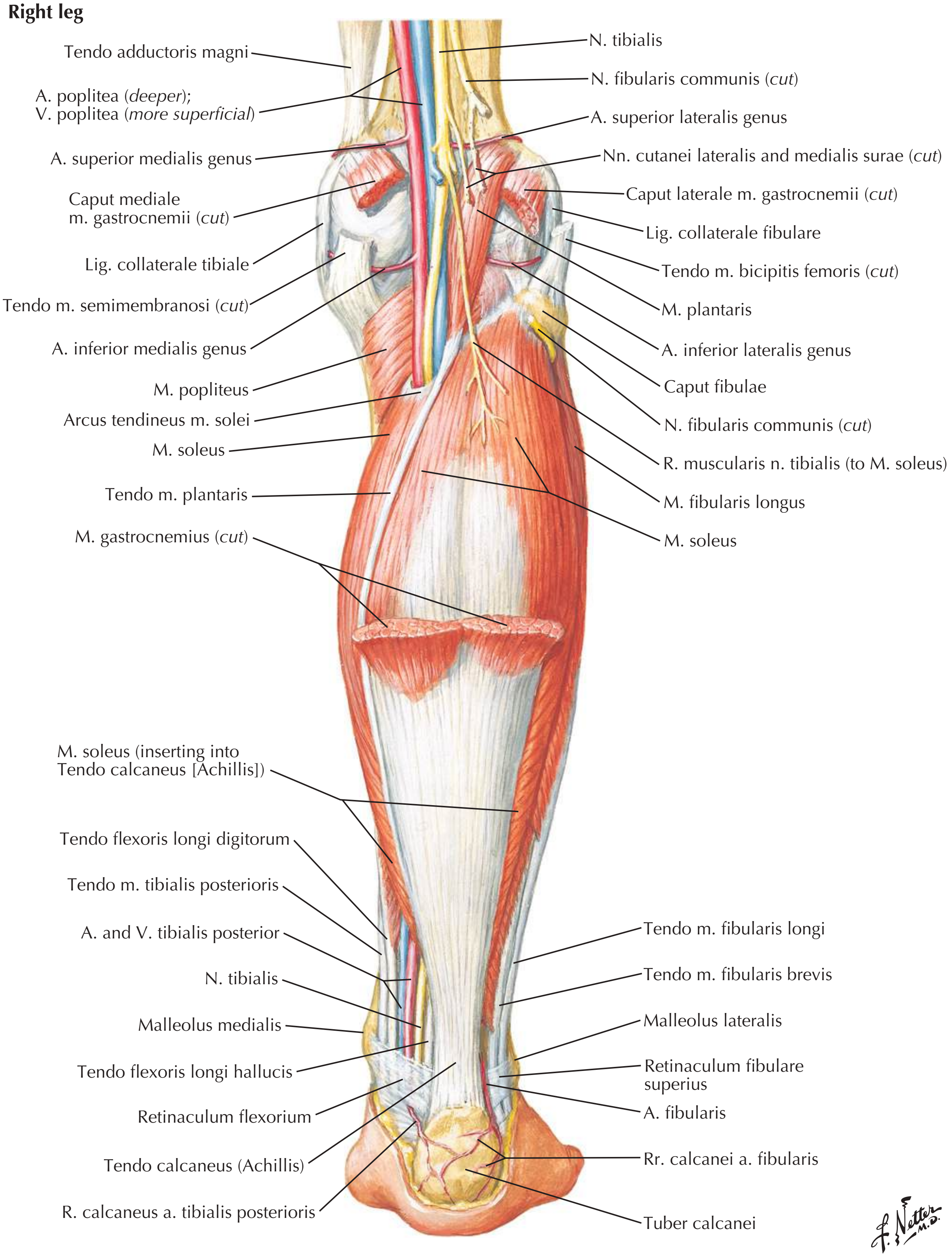
Right leg


M. semitendinosus
M. semimembranosus
M. gracilis
A. poplitea (*lies deep*);
V. poplitea (*superficial*)
M. sartorius
A. superior medialis genus
Caput mediale m. gastrocnemii
R. muscularis n. tibialis
(to M. soleus)
V. saphena parva
M. gastrocnemius
M. soleus
Tendo m. plantaris
Tendo flexoris longi digitorum
Tendo m. tibialis posterioris
A. and V. tibialis posterior
N. tibialis
Malleolus medialis
Tendo flexoris longi hallucis
Retinaculum flexorium
R. calcanei a. tibialis posterioris
Tractus iliotibialis
M. biceps femoris
N. tibialis
N. fibularis communis
A. superior lateralis genus
M. plantaris
Caput laterale m. gastrocnemii
N. cutaneus lateralis surae (*cut*)
N. cutaneus medialis surae (*cut*)
M. soleus
Tendo m. fibularis longi
Tendo m. fibularis brevis
Tendo calcaneus (Achillis)
Malleolus lateralis
Retinaculum fibulare superius
A. fibularis
Rr. calcanei a. fibularis
Tuber calcanei

Muscles of Leg (Intermediate Dissection): Posterior View

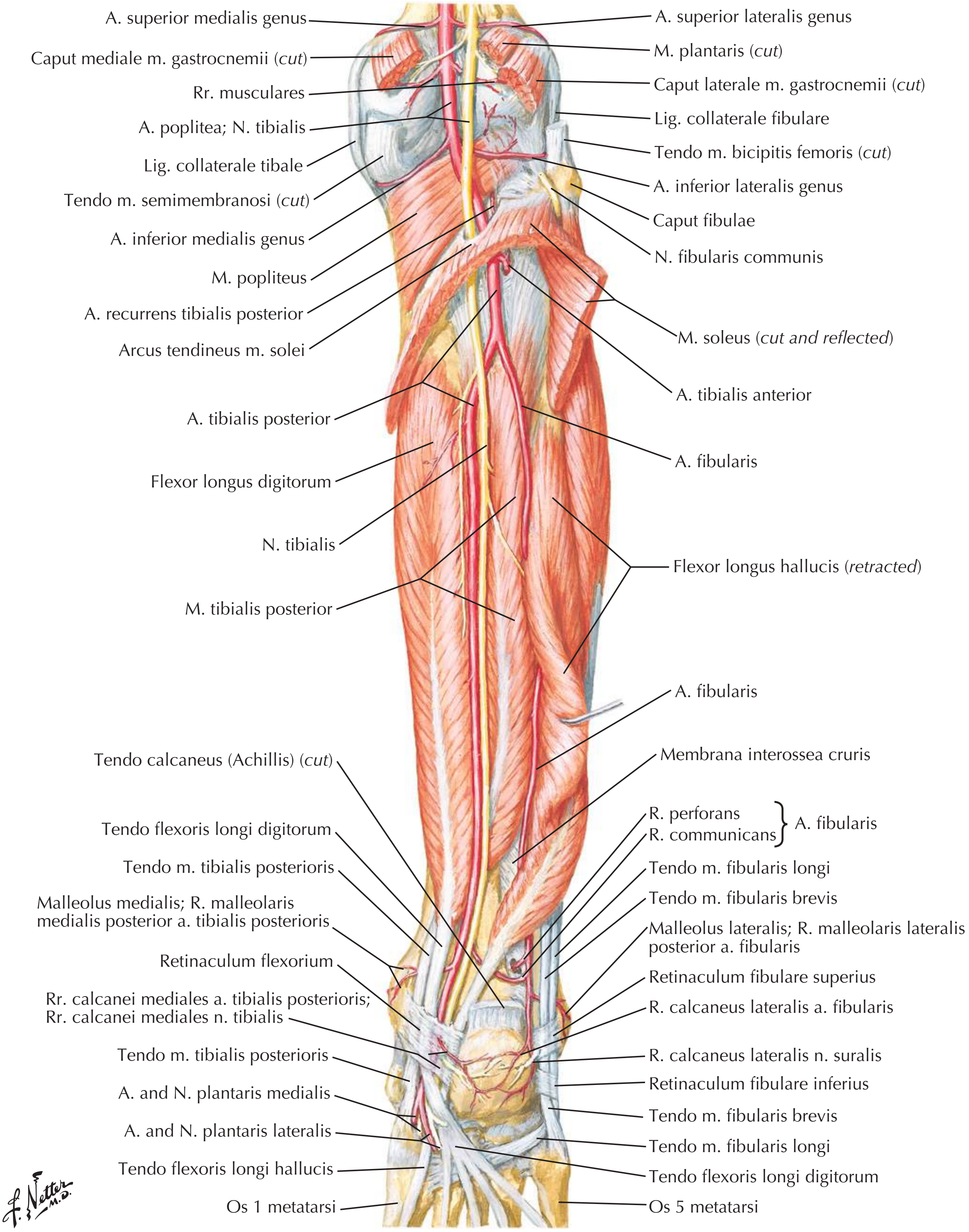
See also Plate 532

Right leg


Tendo adductoris magni
A. poplitea (*deeper*);
V. poplitea (*more superficial*)
A. superior medialis genus
Caput mediale m. gastrocnemii (*cut*)
Lig. collaterale tibiale
Tendo m. semimembranosi (*cut*)
A. inferior medialis genus
M. popliteus
Arcus tendineus m. solei
M. soleus
Tendo m. plantaris
M. gastrocnemius (*cut*)
M. soleus (inserting into Tendo calcaneus [Achillis])
Tendo flexoris longi digitorum
Tendo m. tibialis posterioris
A. and V. tibialis posterior
N. tibialis
Malleolus medialis
Tendo flexoris longi hallucis
Retinaculum flexorium
Tendo calcaneus (Achillis)
R. calcaneus a. tibialis posterioris
N. tibialis
N. fibularis communis (*cut*)
A. superior lateralis genus
Nn. cutanei lateralis and medialis surae (*cut*)
Caput laterale m. gastrocnemii (*cut*)
Lig. collaterale fibulare
Tendo m. bicipitis femoris (*cut*)
M. plantaris
A. inferior lateralis genus
Caput fibulae
N. fibularis communis (*cut*)
R. muscularis n. tibialis (to M. soleus)
M. fibularis longus
M. soleus
Tendo m. fibularis longi
Tendo m. fibularis brevis
Malleolus lateralis
Retinaculum fibulare superius
A. fibularis
Rr. calcanei a. fibularis
Tuber calcanei

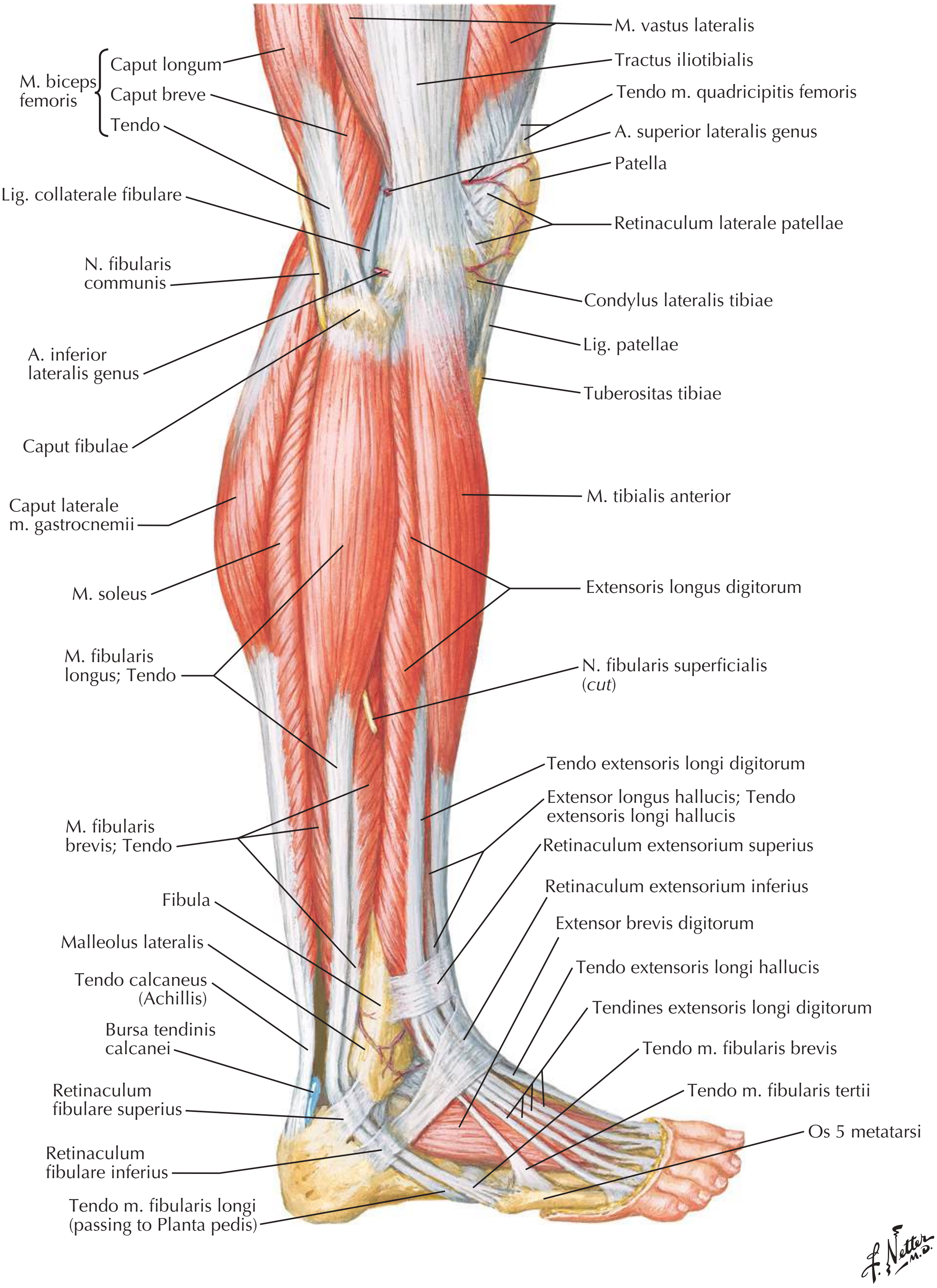
See also Plate 532

Right leg


A. superior medialis genus
Caput mediale m. gastrocnemii (*cut*)
Rr. musculares
A. poplitea; N. tibialis
Lig. collaterale tibale
Tendo m. semimembranosi (*cut*)
A. inferior medialis genus
M. popliteus
A. recurrens tibialis posterior
Arcus tendineus m. solei
A. tibialis posterior
Flexor longus digitorum
N. tibialis
M. tibialis posterior
Tendo calcaneus (Achillis) (*cut*)
Tendo flexoris longi digitorum
Tendo m. tibialis posterioris
Malleolus medialis; R. malleolaris medialis posterior a. tibialis posterioris
Retinaculum flexorium
Rr. calcanei mediales a. tibialis posterioris; Rr. calcanei mediales n. tibialis
Tendo m. tibialis posterioris
A. and N. plantaris medialis
A. and N. plantaris lateralis
Tendo flexoris longi hallucis
Os 1 metatarsi
A. superior lateralis genus
M. plantaris (*cut*)
Caput laterale m. gastrocnemii (*cut*)
Lig. collaterale fibulare
Tendo m. bicipitis femoris (*cut*)
A. inferior lateralis genus
Caput fibulae
N. fibularis communis
M. soleus (*cut and reflected*)
A. tibialis anterior
A. fibularis
Flexor longus hallucis (*retracted*)
A. fibularis
Membrana interossea cruris
R. perforans
R. communicans
A. fibularis
Tendo m. fibularis longi
Tendo m. fibularis brevis
Malleolus lateralis; R. malleolaris lateralis posterior a. fibularis
Retinaculum fibulare superius
R. calcaneus lateralis a. fibularis
R. calcaneus lateralis n. suralis
Retinaculum fibulare inferius
Tendo m. fibularis brevis
Tendo m. fibularis longi
Tendo flexoris longi digitorum
Os 5 metatarsi
F. Netter M.D.

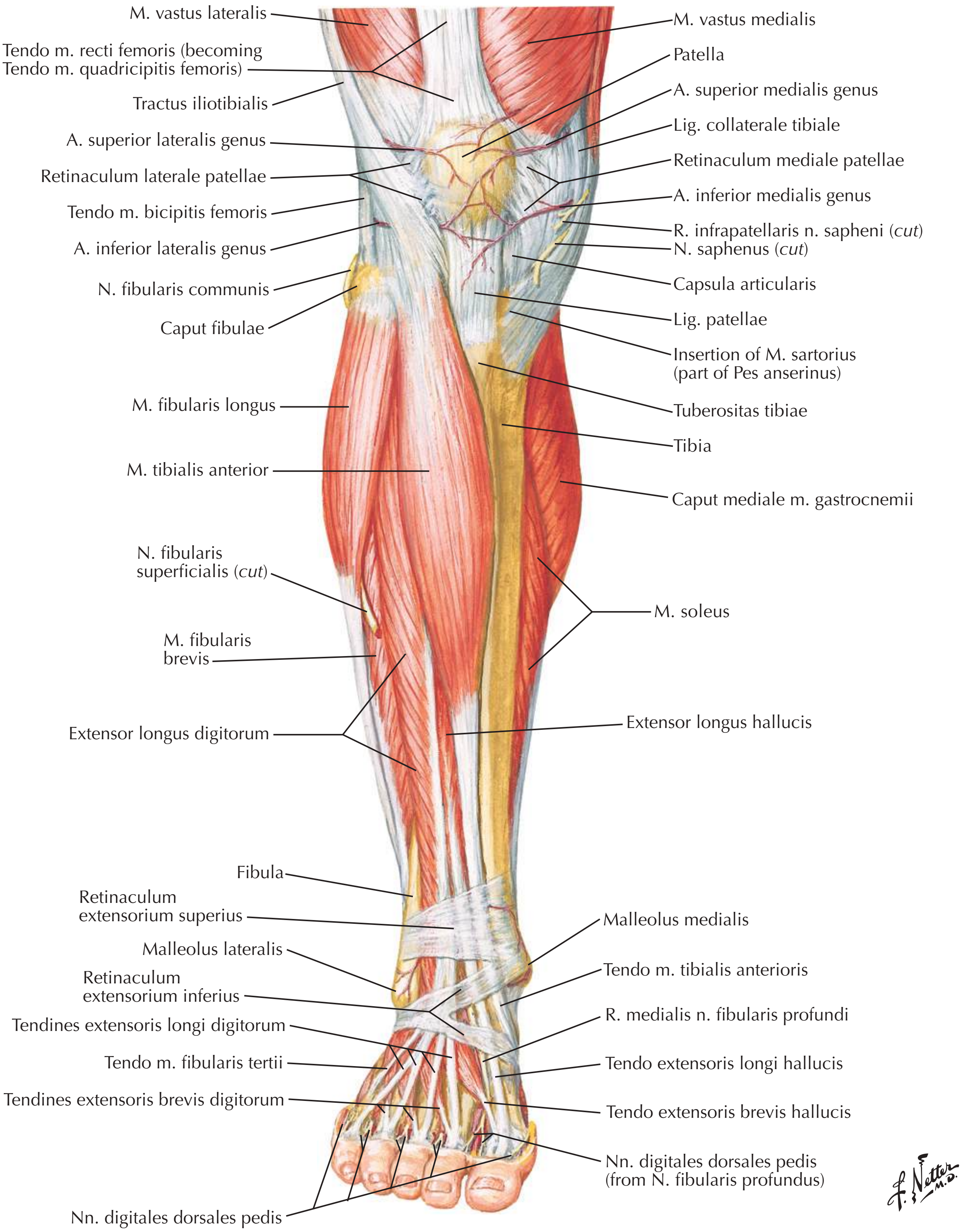
Muscles of Leg: Lateral View

See also **Plates 520**, **533**


M. biceps femoris
Caput longum
Caput breve
Tendo
Lig. collaterale fibulare
N. fibularis communis
A. inferior lateralis genus
Caput fibulae
Caput laterale m. gastrocnemii
M. soleus
M. fibularis longus; Tendo
M. fibularis brevis; Tendo
Fibula
Malleolus lateralis
Tendo calcaneus (Achillis)
Bursa tendinis calcanei
Retinaculum fibulare superius
Retinaculum fibulare inferius
Tendo m. fibularis longi (passing to Planta pedis)
M. vastus lateralis
Tractus iliotibialis
Tendo m. quadricipitis femoris
A. superior lateralis genus
Patella
Retinaculum laterale patellae
Condylus lateralis tibiae
Lig. patellae
Tuberositas tibiae
M. tibialis anterior
Extensoris longus digitorum
N. fibularis superficialis (*cut*)
Tendo extensoris longi digitorum
Extensor longus hallucis; Tendo extensoris longi hallucis
Retinaculum extensorium superius
Retinaculum extensorium inferius
Extensor brevis digitorum
Tendo extensoris longi hallucis
Tendines extensoris longi digitorum
Tendo m. fibularis brevis
Tendo m. fibularis tertii
Os 5 metatarsi

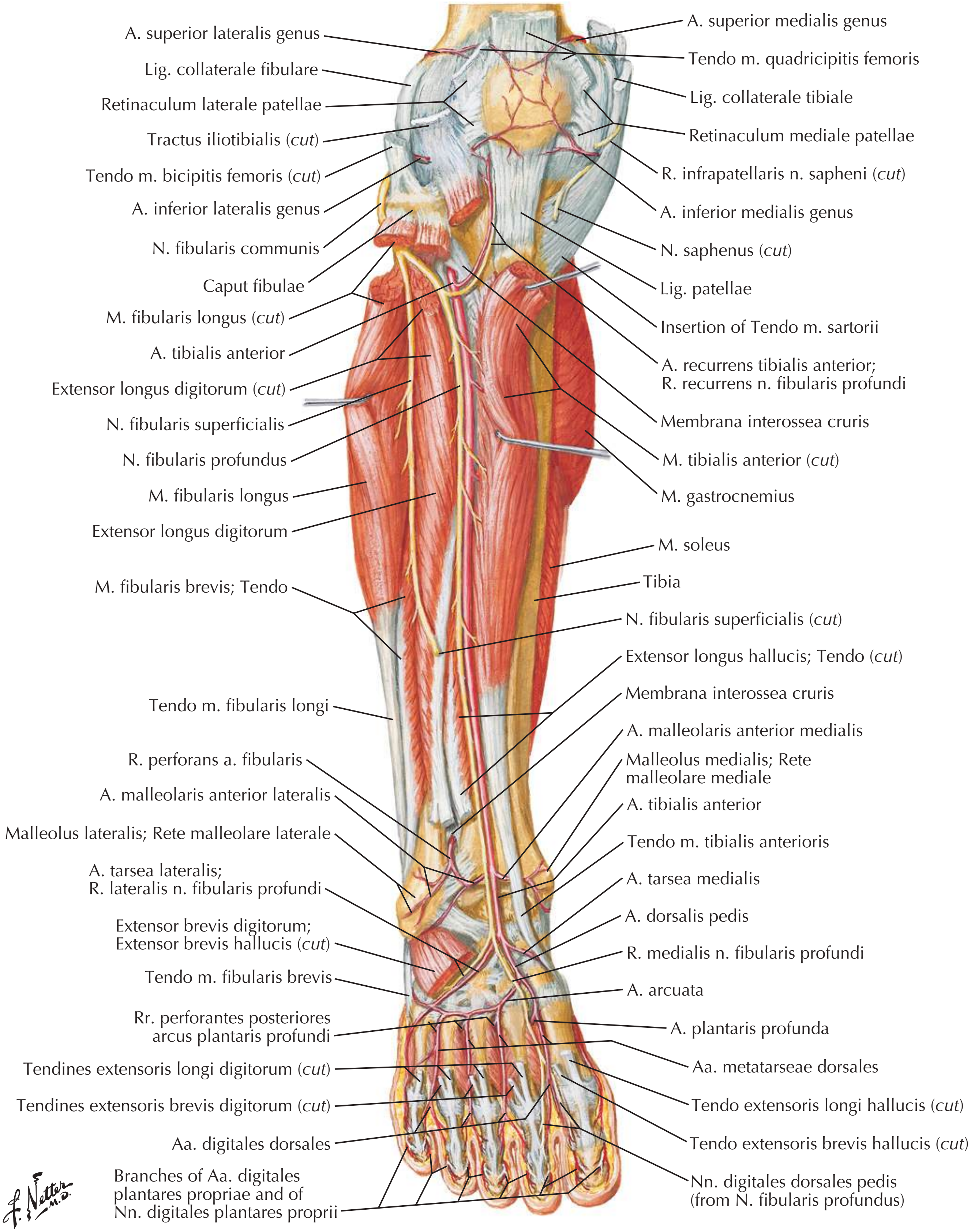
Muscles of Leg (Superficial Dissection): Anterior View

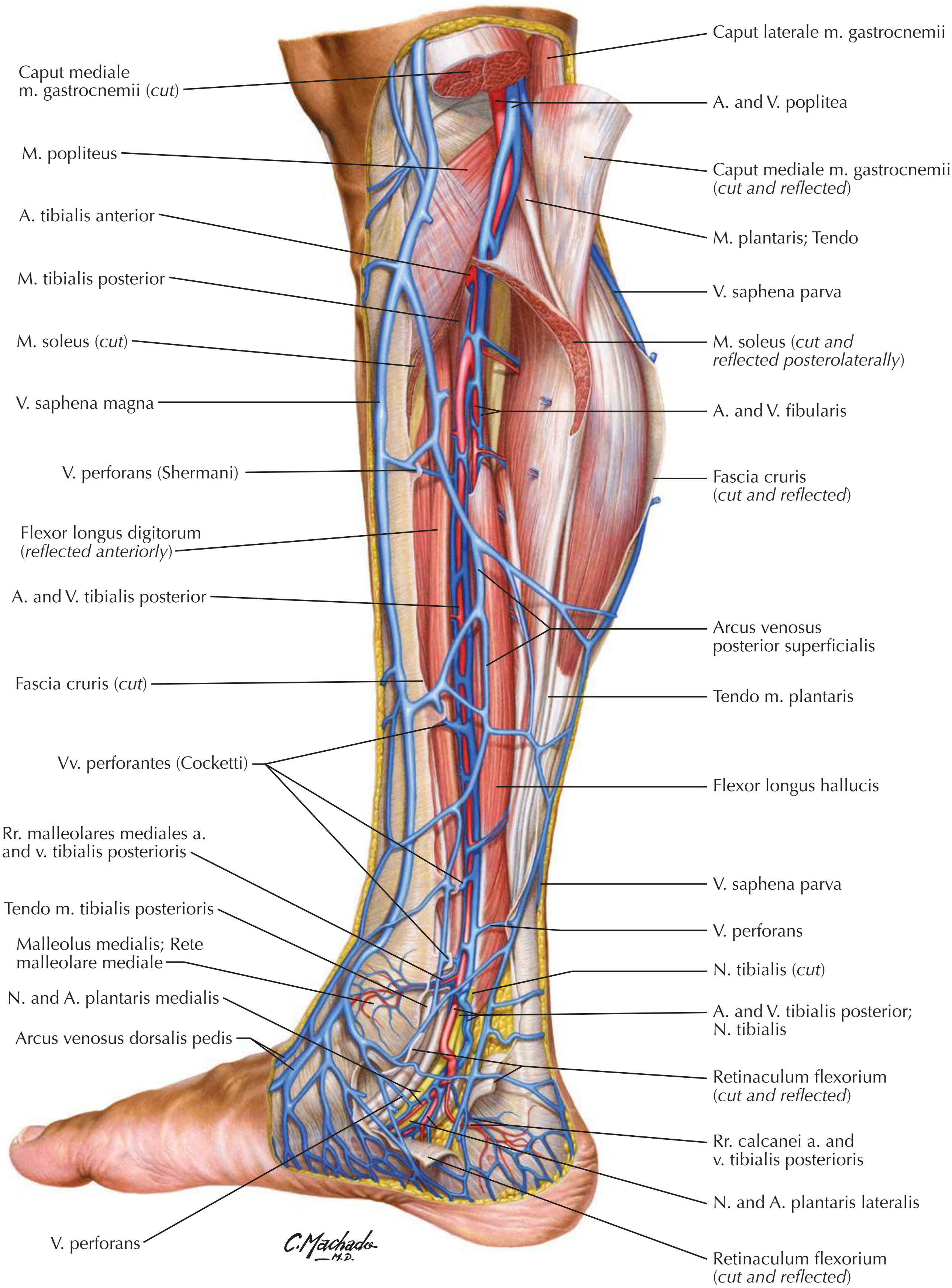
See also Plate 533


M. vastus lateralis
Tendo m. recti femoris (becoming Tendo m. quadricipitis femoris)
Tractus iliotibialis
A. superior lateralis genus
Retinaculum laterale patellae
Tendo m. bicipitis femoris
A. inferior lateralis genus
N. fibularis communis
Caput fibulae
M. fibularis longus
M. tibialis anterior
N. fibularis superficialis (*cut*)
M. fibularis brevis
Extensor longus digitorum
Fibula
Retinaculum extensorium superius
Malleolus lateralis
Retinaculum extensorium inferius
Tendines extensoris longi digitorum
Tendo m. fibularis tertii
Tendines extensoris brevis digitorum
Nn. digitales dorsales pedis
M. vastus medialis
Patella
A. superior medialis genus
Lig. collaterale tibiale
Retinaculum mediale patellae
A. inferior medialis genus
R. infrapatellaris n. sapheni (*cut*)
N. saphenus (*cut*)
Capsula articularis
Lig. patellae
Insertion of M. sartorius (part of Pes anserinus)
Tuberositas tibiae
Tibia
Caput mediale m. gastrocnemii
M. soleus
Extensor longus hallucis
Malleolus medialis
Tendo m. tibialis anterioris
R. medialis n. fibularis profundi
Tendo extensoris longi hallucis
Tendo extensoris brevis hallucis
Nn. digitales dorsales pedis (from N. fibularis profundus)
F. Netter M.D.

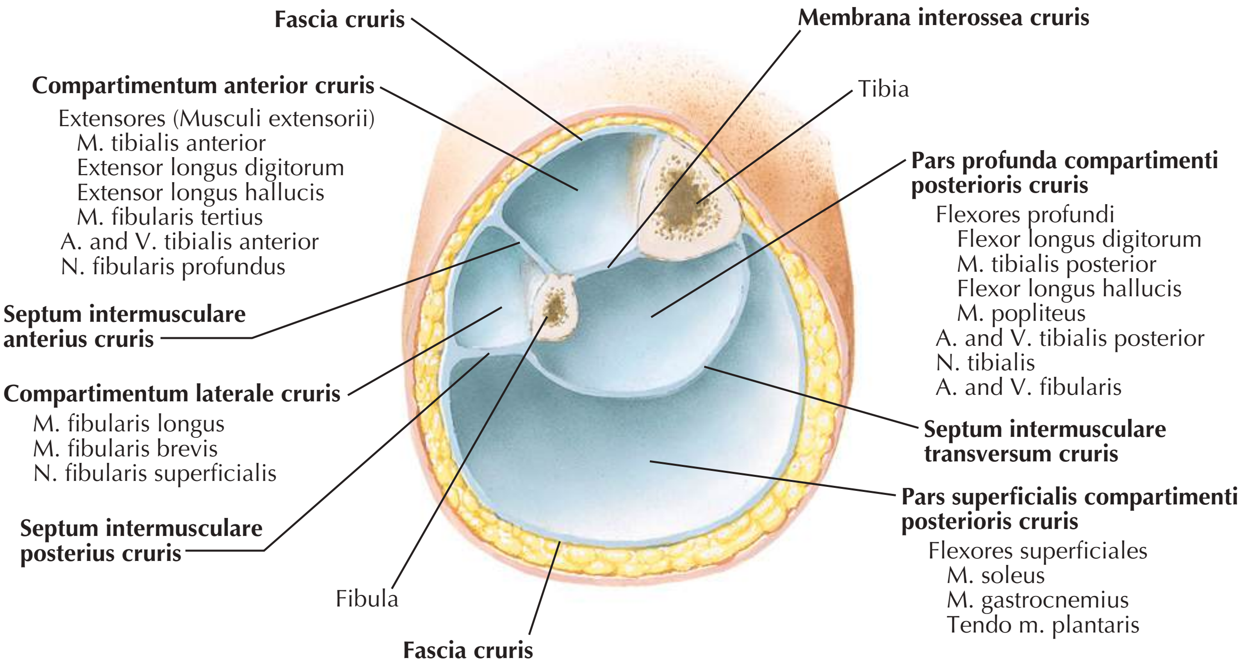
Muscles of Leg (Deep Dissection): Anterior View

See also Plates 521, 533

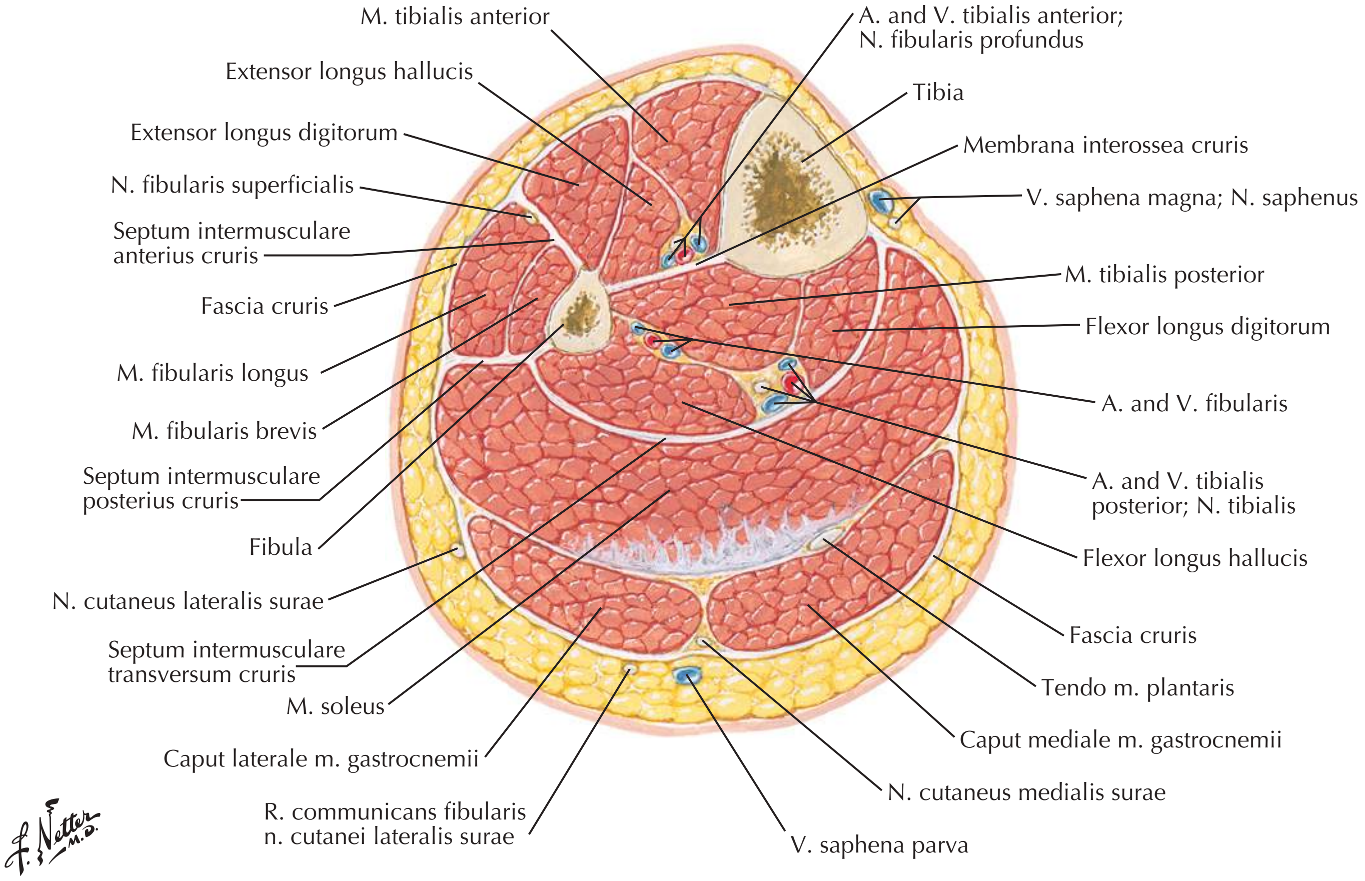

A. superior lateralis genus
Lig. collaterale fibulare
Retinaculum laterale patellae
Tractus iliotibialis (*cut*)
Tendo m. bicipitis femoris (*cut*)
A. inferior lateralis genus
N. fibularis communis
Caput fibulae
M. fibularis longus (*cut*)
A. tibialis anterior
Extensor longus digitorum (*cut*)
N. fibularis superficialis
N. fibularis profundus
M. fibularis longus
Extensor longus digitorum
M. fibularis brevis; Tendo
Tendo m. fibularis longi
R. perforans a. fibularis
A. malleolaris anterior lateralis
Malleolus lateralis; Rete malleolare laterale
A. tarsea lateralis;
R. lateralis n. fibularis profundi
Extensor brevis digitorum;
Extensor brevis hallucis (*cut*)
Tendo m. fibularis brevis
Rr. perforantes posteriores
arcus plantaris profundi
Tendines extensoris longi digitorum (*cut*)
Tendines extensoris brevis digitorum (*cut*)
Aa. digitales dorsales
Branches of Aa. digitales
plantares propriae and of
Nn. digitales plantares proprii
A. superior medialis genus
Tendo m. quadricipitis femoris
Lig. collaterale tibiale
Retinaculum mediale patellae
R. infrapatellaris n. sapheni (*cut*)
A. inferior medialis genus
N. saphenus (*cut*)
Lig. patellae
Insertion of Tendo m. sartorii
A. recurrens tibialis anterior;
R. recurrens n. fibularis profundi
Membrana interossea cruris
M. tibialis anterior (*cut*)
M. gastrocnemius
M. soleus
Tibia
N. fibularis superficialis (*cut*)
Extensor longus hallucis; Tendo (*cut*)
Membrana interossea cruris
A. malleolaris anterior medialis
Malleolus medialis; Rete
malleolare mediale
A. tibialis anterior
Tendo m. tibialis anterioris
A. tarsea medialis
A. dorsalis pedis
R. medialis n. fibularis profundi
A. arcuata
A. plantaris profunda
Aa. metatarseae dorsales
Tendo extensoris longi hallucis (*cut*)
Tendo extensoris brevis hallucis (*cut*)
Nn. digitales dorsales pedis
(from N. fibularis profundus)

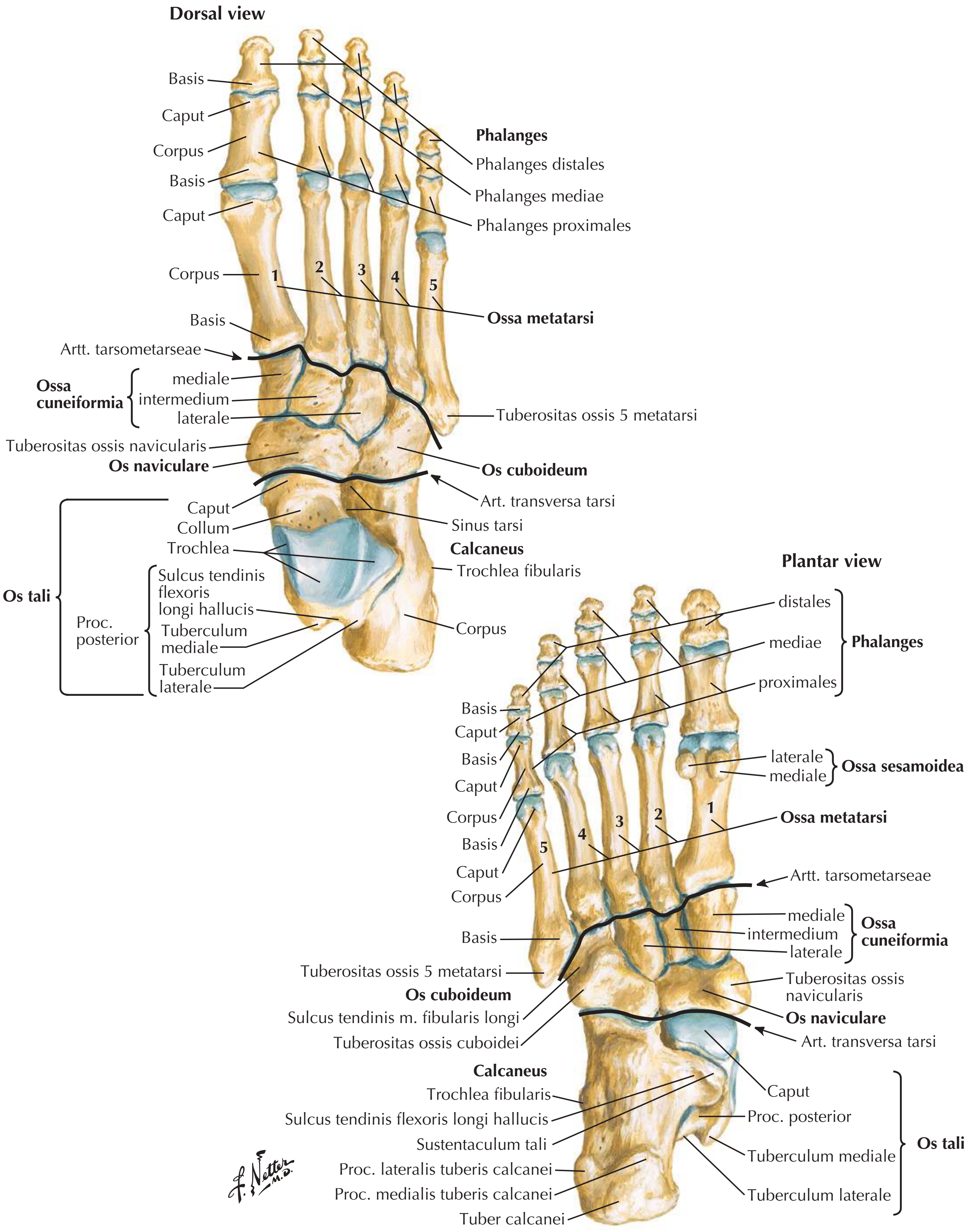

Caput mediale m. gastrocnemii (*cut*)
M. popliteus
A. tibialis anterior
M. tibialis posterior
M. soleus (*cut*)
V. saphena magna
V. perforans (Shermani)
Flexor longus digitorum (*reflected anteriorly*)
A. and V. tibialis posterior
Fascia cruris (*cut*)
Vv. perforantes (Cocketti)
Rr. malleolares mediales a. and v. tibialis posterioris
Tendo m. tibialis posterioris
Malleolus medialis; Rete malleolare mediale
N. and A. plantaris medialis
Arcus venosus dorsalis pedis
V. perforans
Caput laterale m. gastrocnemii
A. and V. poplitea
Caput mediale m. gastrocnemii (*cut and reflected*)
M. plantaris; Tendo
V. saphena parva
M. soleus (*cut and reflected posterolaterally*)
A. and V. fibularis
Fascia cruris (*cut and reflected*)
Arcus venosus posterior superficialis
Tendo m. plantaris
Flexor longus hallucis
V. saphena parva
V. perforans
N. tibialis (*cut*)
A. and V. tibialis posterior; N. tibialis
Retinaculum flexorium (*cut and reflected*)
Rr. calcanei a. and v. tibialis posterioris
N. and A. plantaris lateralis
Retinaculum flexorium (*cut and reflected*)
C. Machado M.D.

Leg: Cross Sections and Fascial Compartments


Fascia cruris
Membrana interossea cruris
Compartimentum anterior cruris
Extensores (Musculi extensorii)
M. tibialis anterior
Extensor longus digitorum
Extensor longus hallucis
M. fibularis tertius
A. and V. tibialis anterior
N. fibularis profundus
Tibia
Pars profunda compartimenti posterioris cruris
Flexores profundi
Flexor longus digitorum
M. tibialis posterior
Flexor longus hallucis
M. popliteus
A. and V. tibialis posterior
N. tibialis
A. and V. fibularis
Septum intermusculare anterius cruris
Compartimentum laterale cruris
M. fibularis longus
M. fibularis brevis
N. fibularis superficialis
Septum intermusculare transversum cruris
Pars superficialis compartimenti posterioris cruris
Flexores superficiales
M. soleus
M. gastrocnemius
Tendo m. plantaris
Septum intermusculare posterius cruris
Fibula
Fascia cruris

Cross section just above middle of leg


M. tibialis anterior
A. and V. tibialis anterior; N. fibularis profundus
Extensor longus hallucis
Tibia
Extensor longus digitorum
Membrana interossea cruris
N. fibularis superficialis
V. saphena magna; N. saphenus
Septum intermusculare anterius cruris
M. tibialis posterior
Fascia cruris
Flexor longus digitorum
M. fibularis longus
A. and V. fibularis
M. fibularis brevis
Septum intermusculare posterius cruris
A. and V. tibialis posterior; N. tibialis
Fibula
Flexor longus hallucis
N. cutaneus lateralis surae
Fascia cruris
Septum intermusculare transversum cruris
Tendo m. plantaris
M. soleus
Caput mediale m. gastrocnemii
Caput laterale m. gastrocnemii
N. cutaneus medialis surae
R. communicans fibularis n. cutanei lateralis surae
V. saphena parva
F. Netter M.D.



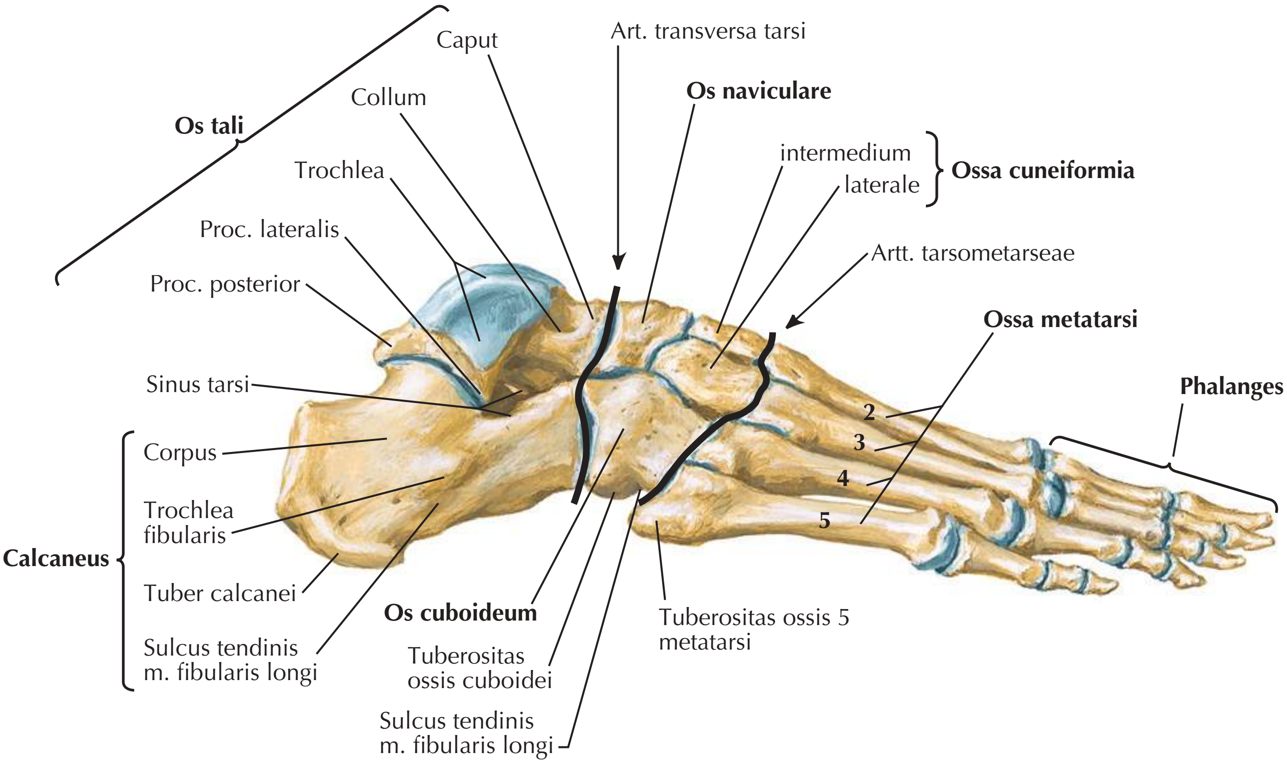
Dorsal view

Plantar view

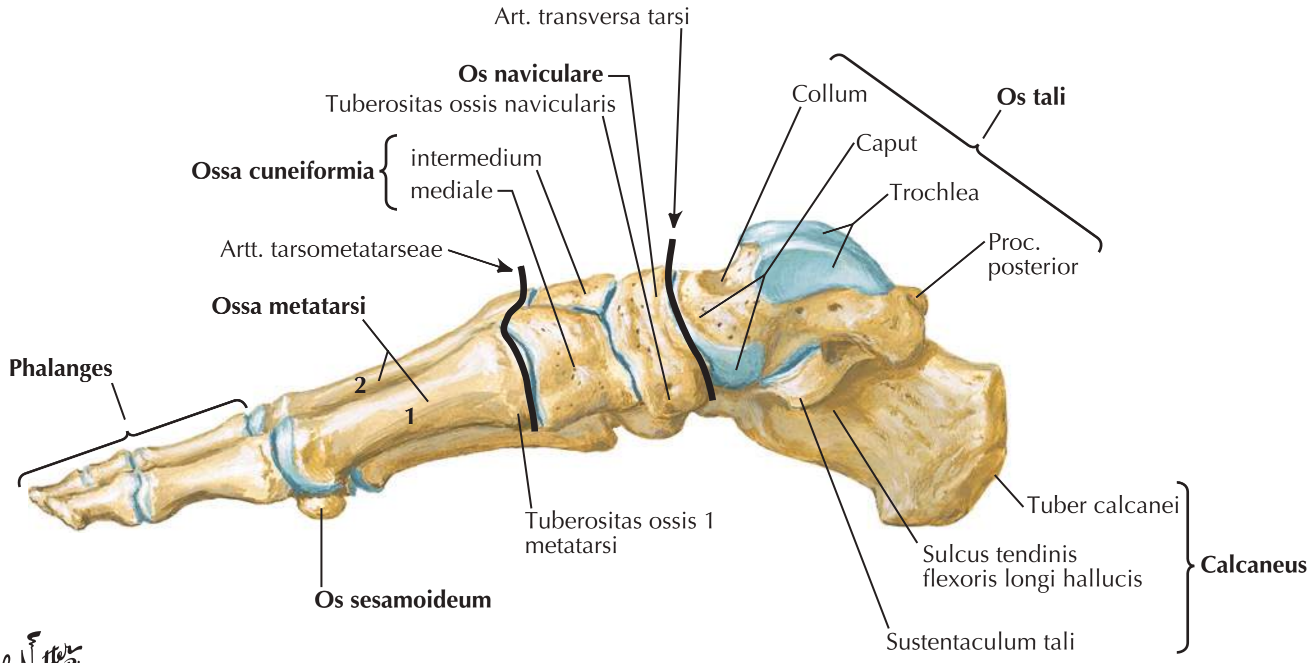
Basis
Caput
Corpus
Basis
Caput
Corpus
Basis
Artt. tarsometarseae
Ossa cuneiformia
mediale
intermedium
laterale
Tuberositas ossis navicularis
Os naviculare
Os tali
Caput
Collum
Trochlea
Proc. posterior
Sulcus tendinis flexoris longi hallucis
Tuberculum mediale
Tuberculum laterale
Phalanges
Phalanges distales
Phalanges mediae
Phalanges proximales
1
2
3
4
5
Ossa metatarsi
Tuberositas ossis 5 metatarsi
Os cuboideum
Art. transversa tarsi
Sinus tarsi
Calcaneus
Trochlea fibularis
Corpus
distales
mediae
proximales
Phalanges
Basis
Caput
Basis
Caput
Corpus
Basis
Caput
Corpus
Basis
laterale
mediale
Ossa sesamoidea
1
2
3
4
5
Ossa metatarsi
Artt. tarsometarseae
mediale
intermedium
laterale
Ossa cuneiformia
Tuberositas ossis 5 metatarsi
Os cuboideum
Sulcus tendinis m. fibularis longi
Tuberositas ossis cuboidei
Tuberositas ossis navicularis
Os naviculare
Art. transversa tarsi
Calcaneus
Trochlea fibularis
Sulcus tendinis flexoris longi hallucis
Sustentaculum tali
Proc. lateralis tuberis calcanei
Proc. medialis tuberis calcanei
Tuber calcanei
Caput
Proc. posterior
Tuberculum mediale
Tuberculum laterale
Os tali

See also Plate 535

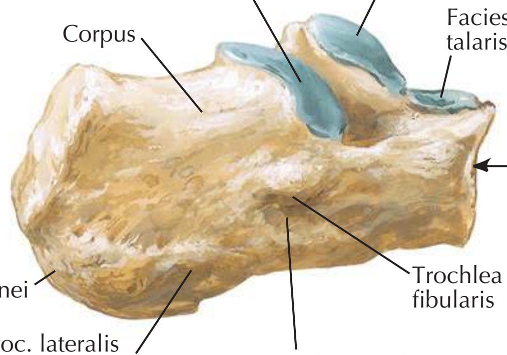
Lateral view


Os tali
Caput
Collum
Trochlea
Proc. lateralis
Proc. posterior
Art. transversa tarsi
Os naviculare
intermedium
laterale
Ossa cuneiformia
Artt. tarsometarseae
Ossa metatarsi
Phalanges
2
3
4
5
Sinus tarsi
Corpus
Trochlea fibularis
Calcaneus
Tuber calcanei
Sulcus tendinis m. fibularis longi
Os cuboideum
Tuberositas ossis cuboidei
Sulcus tendinis m. fibularis longi
Tuberositas ossis 5 metatarsi

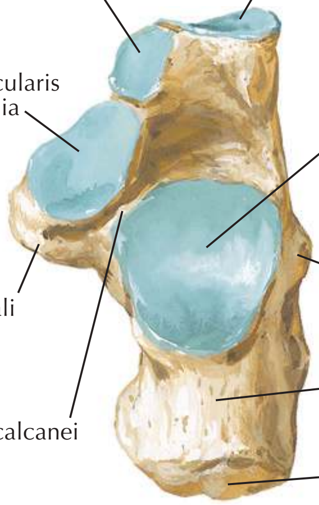
Medial view


Art. transversa tarsi
Os naviculare
Tuberositas ossis navicularis
Ossa cuneiformia
intermedium
mediale
Artt. tarsometatarseae
Ossa metatarsi
2
1
Phalanges
Collum
Os tali
Caput
Trochlea
Proc. posterior
Tuberositas ossis 1 metatarsi
Os sesamoideum
Tuber calcanei
Sulcus tendinis flexoris longi hallucis
Calcaneus
Sustentaculum tali

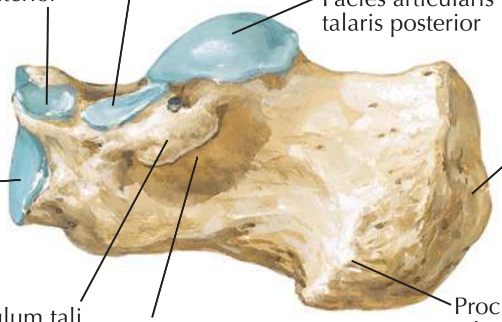
Right foot


Facies articularis talaris posterior
Facies articularis talaris media
Corpus
Facies articularis talaris anterior
Facies articularis cuboidea
Tuber calcanei
Trochlea fibularis
Proc. lateralis tuberis calcanei
Sulcus tendinis m. fibularis longi

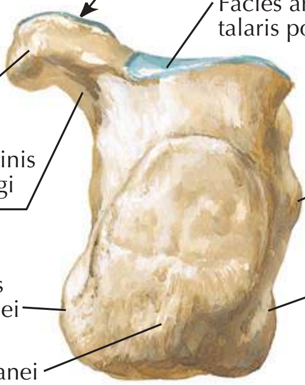
Lateral view


Facies articularis talaris anterior
Facies articularis cuboidea
Facies articularis talaris media
Facies articularis talaris posterior
Sustentaculum tali
Trochlea fibularis
Corpus
Sulcus calcanei
Tuber calcanei

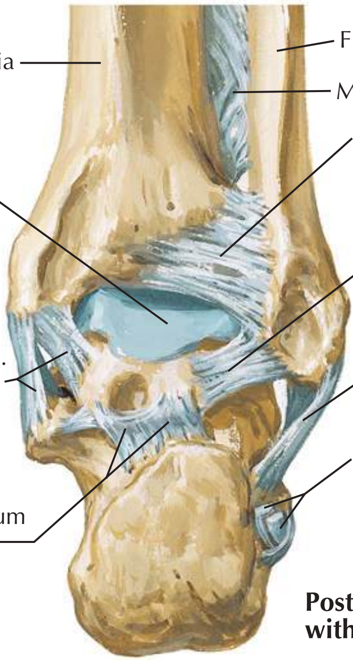
Superior view


Facies articularis talaris anterior
Facies articularis talaris media
Facies articularis talaris posterior
Facies articularis cuboidea
Tuber calcanei
Sustentaculum tali
Sulcus tendinis flexoris longi hallucis
Proc. medialis tuberis calcanei

Medial view


Facies articularis talaris media
Facies articularis talaris posterior
Sustentaculum tali
Sulcus tendinis flexoris longi hallucis
Trochlea fibularis
Proc. medialis tuberis calcanei
Proc. lateralis tuberis calcanei
Tuber calcanei

Posterior view


Tibia
Fibula
Membrana interossea cruris
Lig. tibiofibulare posterius
Os tali
Lig. talofibulare posterius
Lig. collaterale mediale (Lig. deltoideum)
Lig. calcaneofibulare
Tendines mm. fibularium longi and brevis (in Retinaculum fibulare inferius)
Lig. talocalcaneum posterius

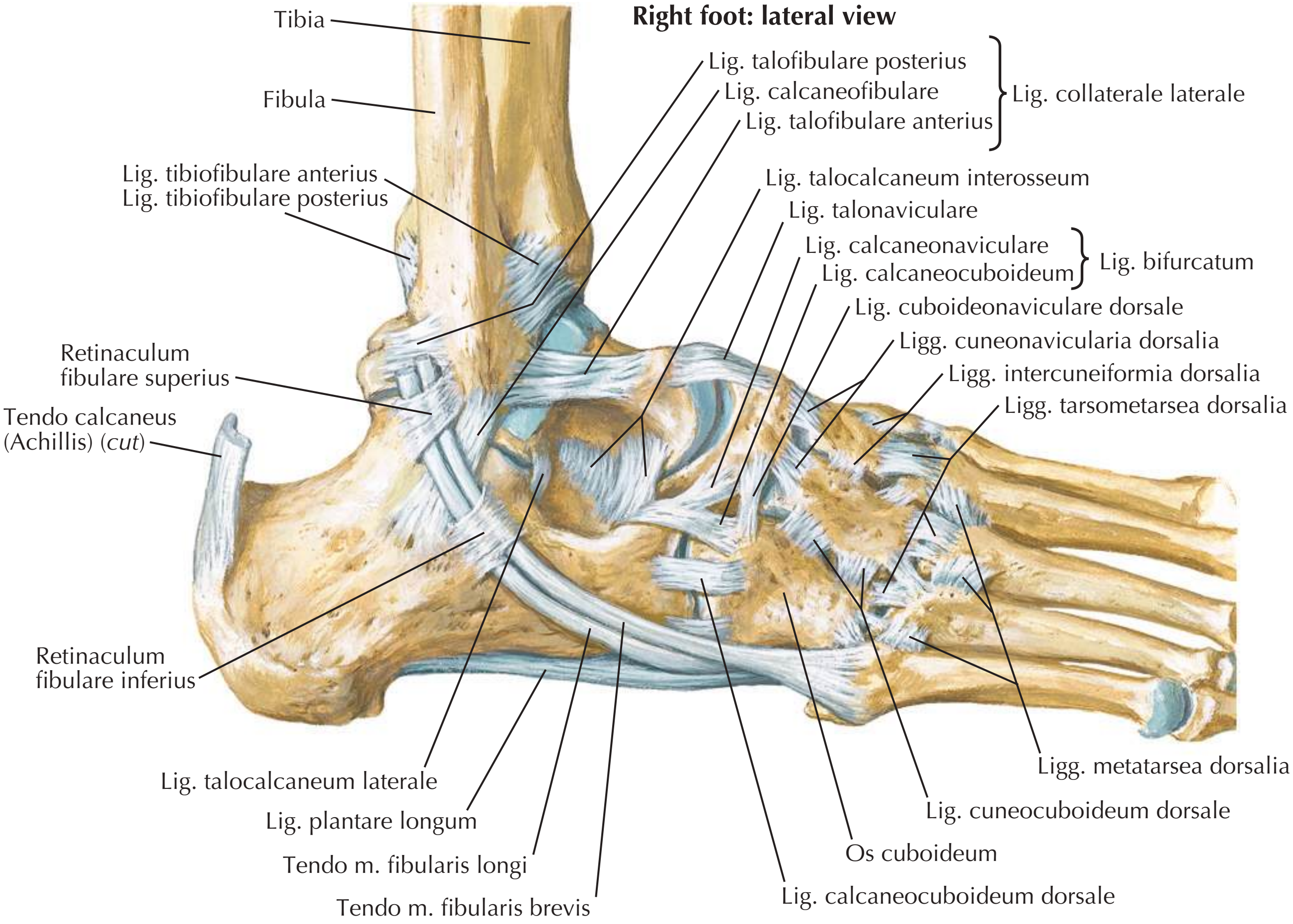
F. Netter M.D.

Posterior view with ligaments

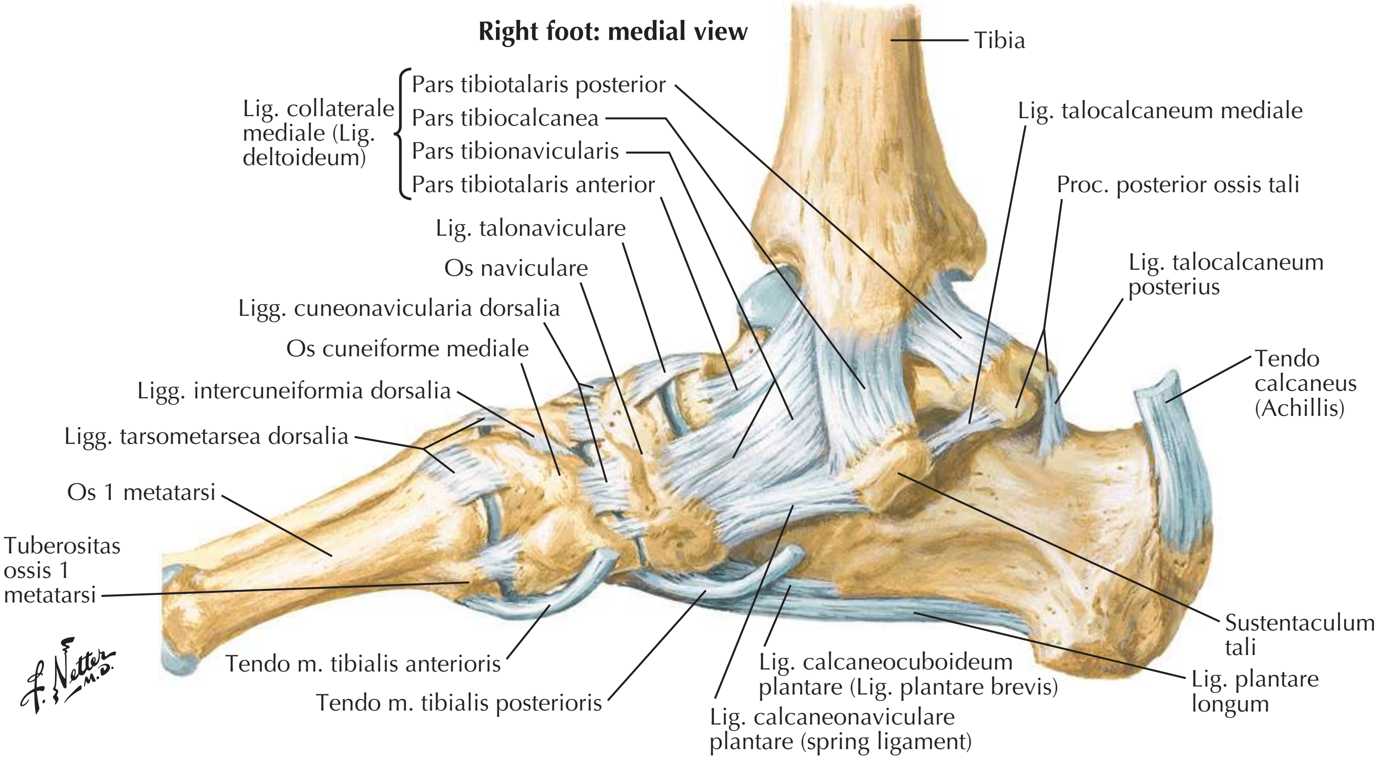
Ligaments and Tendons of Ankle

See also Plate 535

Right foot: lateral view

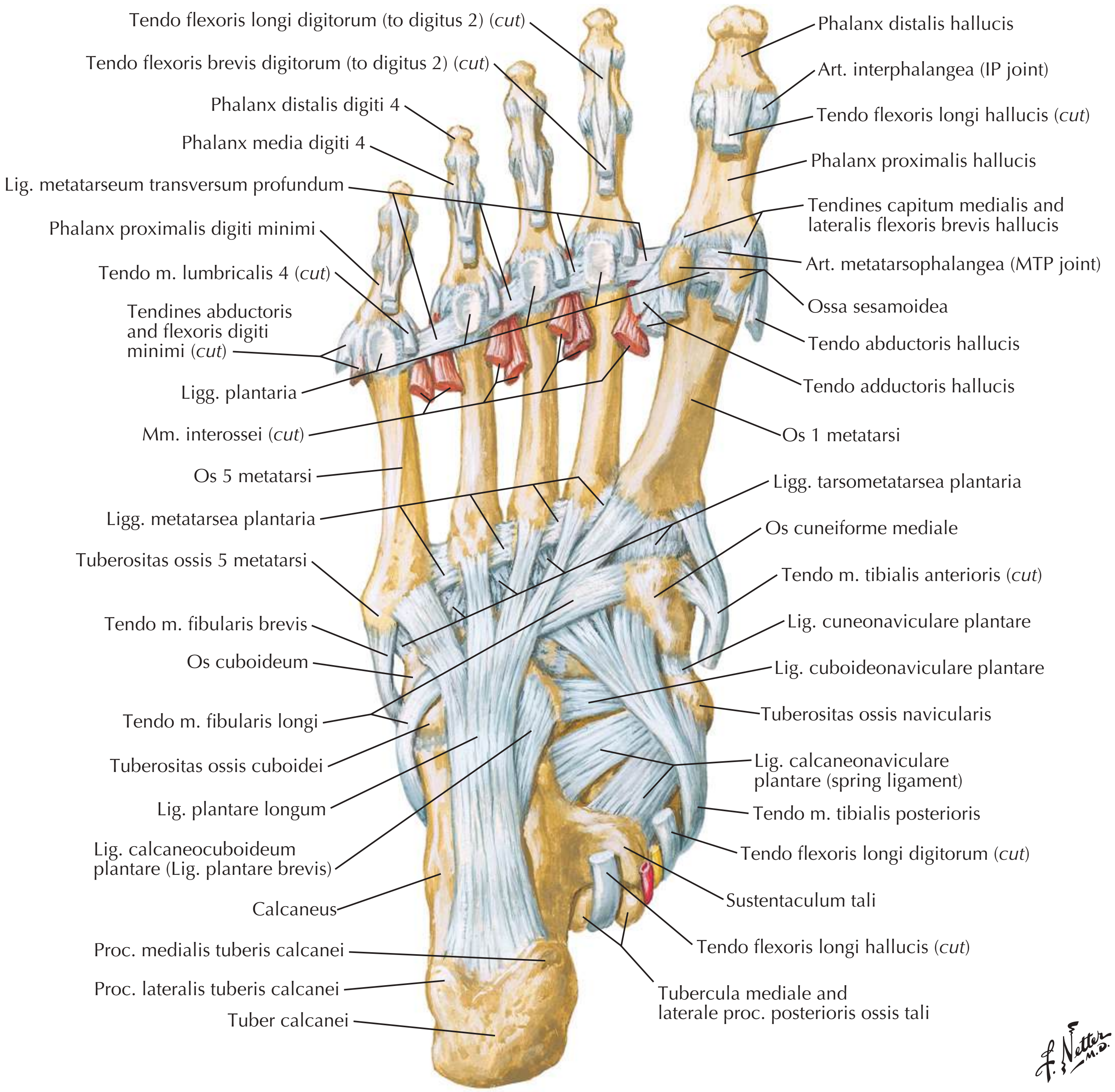

Tibia
Fibula
Lig. tibiofibulare anterius
Lig. tibiofibulare posterius
Retinaculum fibulare superius
Tendo calcaneus (Achillis) (*cut*)
Retinaculum fibulare inferius
Lig. talofibulare posterius
Lig. calcaneofibulare
Lig. talofibulare anterius
Lig. collaterale laterale
Lig. talocalcaneum interosseum
Lig. talonaviculare
Lig. calcaneonaviculare
Lig. calcaneocuboideum
Lig. bifurcatum
Lig. cuboideonaviculare dorsale
Ligg. cuneonavicularia dorsalia
Ligg. intercuneiformia dorsalia
Ligg. tarsometarsea dorsalia
Ligg. metatarsea dorsalia
Lig. cuneocuboideum dorsale
Os cuboideum
Lig. calcaneocuboideum dorsale
Lig. talocalcaneum laterale
Lig. plantare longum
Tendo m. fibularis longi
Tendo m. fibularis brevis

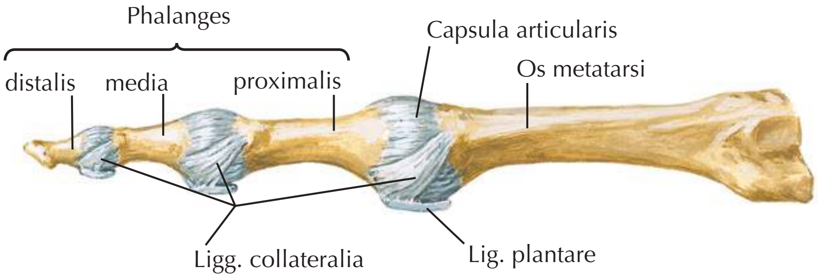
Right foot: medial view


Tibia
Lig. collaterale mediale (Lig. deltoideum)
Pars tibiotalaris posterior
Pars tibiocalcanea
Pars tibionavicularis
Pars tibiotalaris anterior
Lig. talonaviculare
Os naviculare
Ligg. cuneonavicularia dorsalia
Os cuneiforme mediale
Ligg. intercuneiformia dorsalia
Ligg. tarsometarsea dorsalia
Os 1 metatarsi
Tuberositas ossis 1 metatarsi
Tendo m. tibialis anterioris
Tendo m. tibialis posterioris
Lig. talocalcaneum mediale
Proc. posterior ossis tali
Lig. talocalcaneum posterius
Tendo calcaneus (Achillis)
Sustentaculum tali
Lig. plantare longum
Lig. calcaneocuboideum plantare (Lig. plantare brevis)
Lig. calcaneonaviculare plantare (spring ligament)

Ligaments and Tendons of Foot: Plantar View

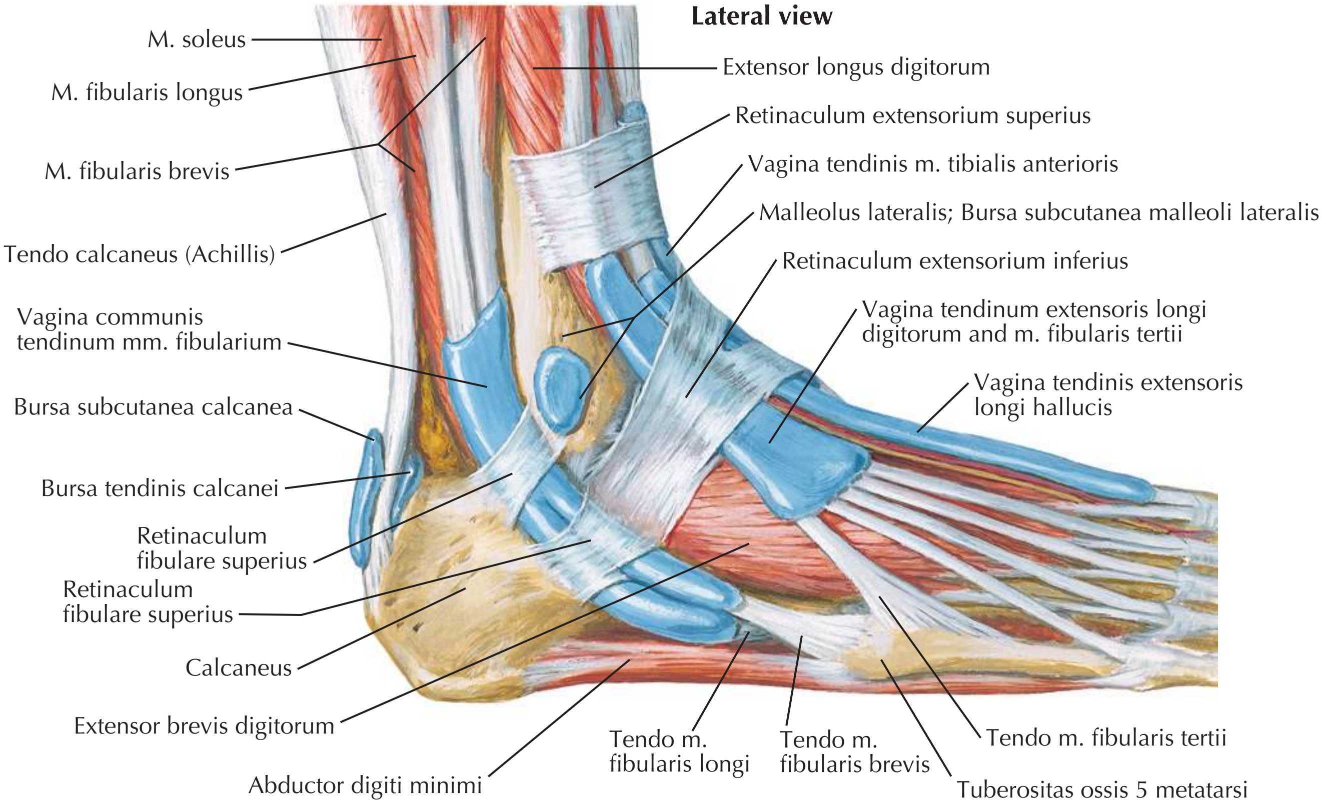
See also Plates 526, 527

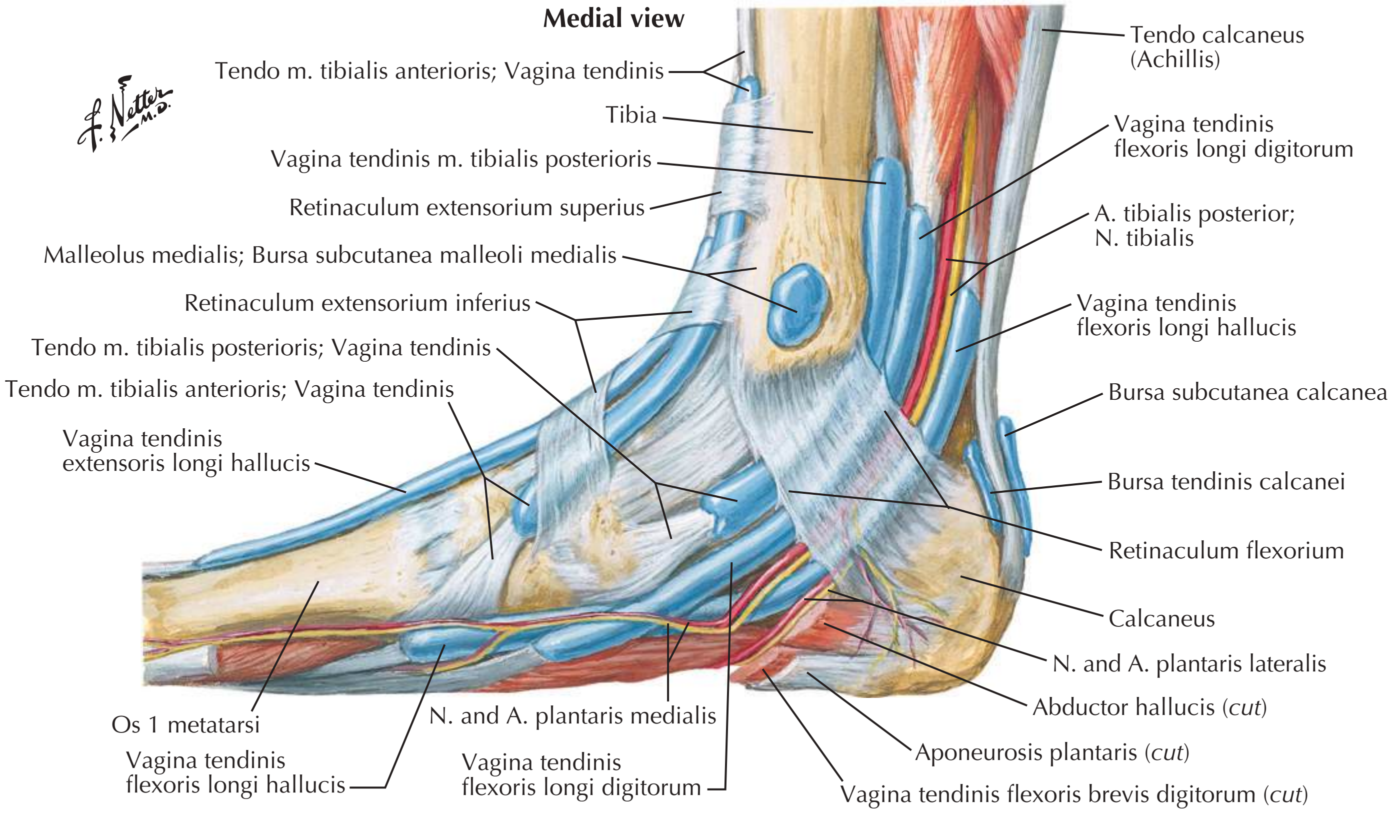

Tendo flexoris longi digitorum (to digitus 2) (*cut*)
Tendo flexoris brevis digitorum (to digitus 2) (*cut*)
Phalanx distalis digiti 4
Phalanx media digiti 4
Lig. metatarseum transversum profundum
Phalanx proximalis digiti minimi
Tendo m. lumbricalis 4 (*cut*)
Tendines abductoris and flexoris digiti minimi (*cut*)
Ligg. plantaria
Mm. interossei (*cut*)
Os 5 metatarsi
Ligg. metatarsea plantaria
Tuberositas ossis 5 metatarsi
Tendo m. fibularis brevis
Os cuboideum
Tendo m. fibularis longi
Tuberositas ossis cuboidei
Lig. plantare longum
Lig. calcaneocuboideum plantare (Lig. plantare brevis)
Calcaneus
Proc. medialis tuberis calcanei
Proc. lateralis tuberis calcanei
Tuber calcanei
Phalanx distalis hallucis
Art. interphalangea (IP joint)
Tendo flexoris longi hallucis (*cut*)
Phalanx proximalis hallucis
Tendines capitum medialis and lateralis flexoris brevis hallucis
Art. metatarsophalangea (MTP joint)
Ossa sesamoidea
Tendo abductoris hallucis
Tendo adductoris hallucis
Os 1 metatarsi
Ligg. tarsometatarsea plantaria
Os cuneiforme mediale
Tendo m. tibialis anterioris (*cut*)
Lig. cuneonaviculare plantare
Lig. cuboideonaviculare plantare
Tuberositas ossis navicularis
Lig. calcaneonaviculare plantare (spring ligament)
Tendo m. tibialis posterioris
Tendo flexoris longi digitorum (*cut*)
Sustentaculum tali
Tendo flexoris longi hallucis (*cut*)
Tubercula mediale and laterale proc. posterioris ossis tali
F. Netter M.D.


Phalanges
distalis
media
proximalis
Capsula articularis
Os metatarsi
Ligg. collateralia
Lig. plantare

Capsules and ligaments of metatarsophalangeal and interphalangeal joints: lateral view

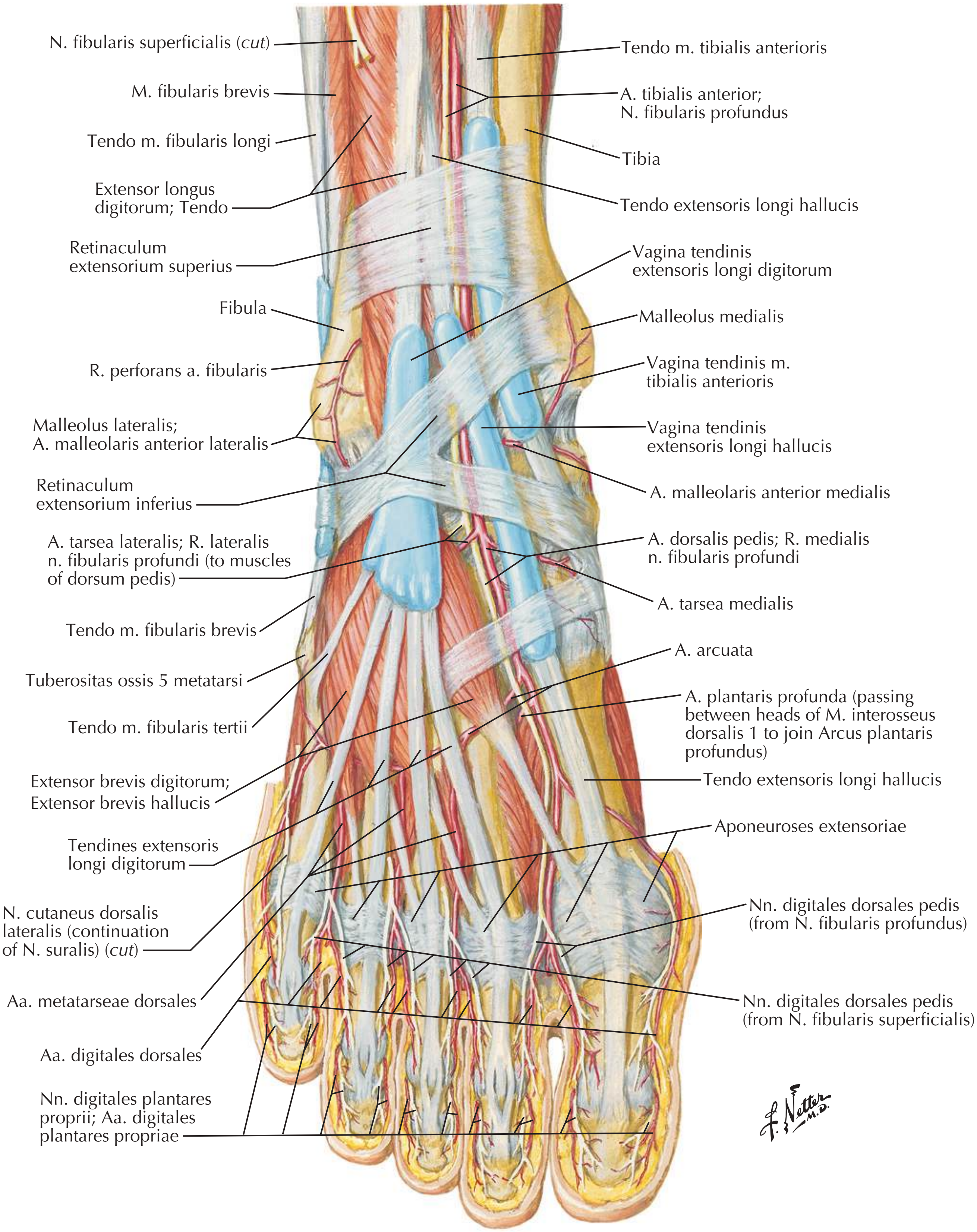
Tendon Sheaths of Ankle


Lateral view
M. soleus
M. fibularis longus
M. fibularis brevis
Tendo calcaneus (Achillis)
Vagina communis tendinum mm. fibularium
Bursa subcutanea calcanea
Bursa tendinis calcanei
Retinaculum fibulare superius
Retinaculum fibulare superius
Calcaneus
Extensor brevis digitorum
Abductor digiti minimi
Extensor longus digitorum
Retinaculum extensorium superius
Vagina tendinis m. tibialis anterioris
Malleolus lateralis; Bursa subcutanea malleoli lateralis
Retinaculum extensorium inferius
Vagina tendinum extensoris longi digitorum and m. fibularis tertii
Vagina tendinis extensoris longi hallucis
Tendo m. fibularis longi
Tendo m. fibularis brevis
Tendo m. fibularis tertii
Tuberositas ossis 5 metatarsi


Medial view
Tendo m. tibialis anterioris; Vagina tendinis
Tibia
Vagina tendinis m. tibialis posterioris
Retinaculum extensorium superius
Malleolus medialis; Bursa subcutanea malleoli medialis
Retinaculum extensorium inferius
Tendo m. tibialis posterioris; Vagina tendinis
Tendo m. tibialis anterioris; Vagina tendinis
Vagina tendinis extensoris longi hallucis
Os 1 metatarsi
Vagina tendinis flexoris longi hallucis
N. and A. plantaris medialis
Vagina tendinis flexoris longi digitorum
Tendo calcaneus (Achillis)
Vagina tendinis flexoris longi digitorum
A. tibialis posterior; N. tibialis
Vagina tendinis flexoris longi hallucis
Bursa subcutanea calcanea
Bursa tendinis calcanei
Retinaculum flexorium
Calcaneus
N. and A. plantaris lateralis
Abductor hallucis (cut)
Aponeurosis plantaris (cut)
Vagina tendinis flexoris brevis digitorum (cut)

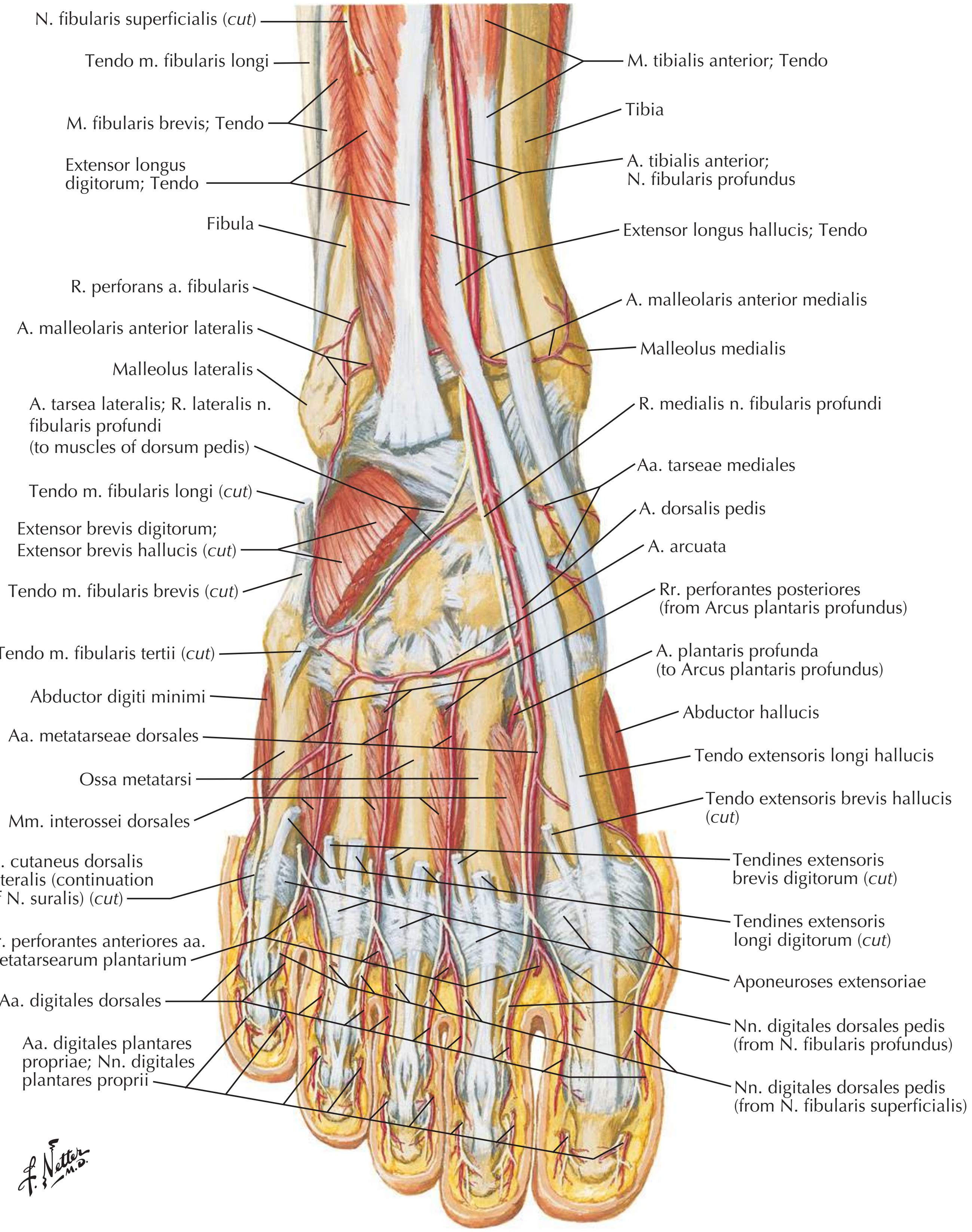
Muscles of Dorsum of Foot: Superficial Dissection

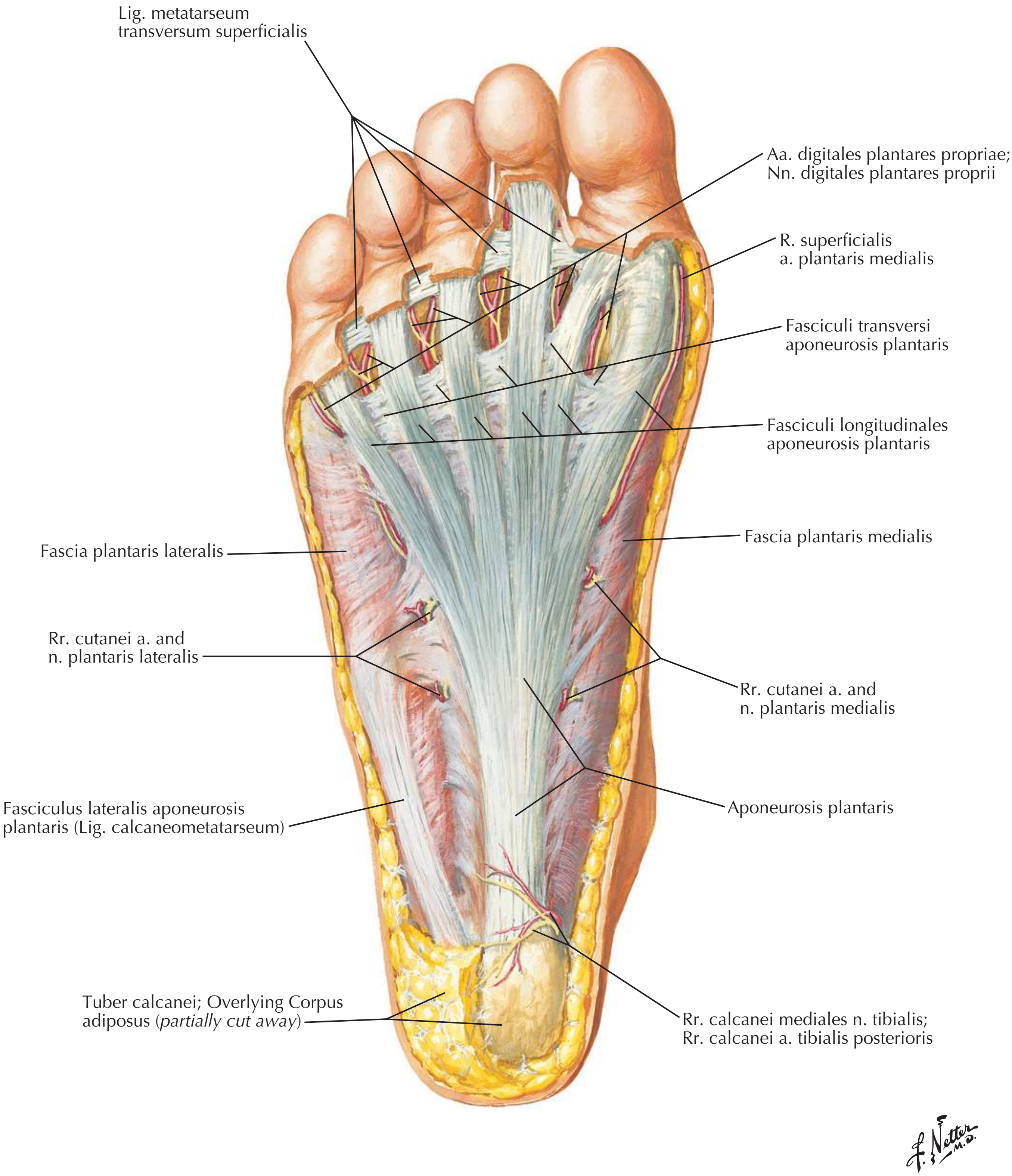
See also Plate 533


N. fibularis superficialis (*cut*)
M. fibularis brevis
Tendo m. fibularis longi
Extensor longus digitorum; Tendo
Retinaculum extensorium superius
Fibula
R. perforans a. fibularis
Malleolus lateralis; A. malleolaris anterior lateralis
Retinaculum extensorium inferius
A. tarsea lateralis; R. lateralis n. fibularis profundi (to muscles of dorsum pedis)
Tendo m. fibularis brevis
Tuberositas ossis 5 metatarsi
Tendo m. fibularis tertii
Extensor brevis digitorum; Extensor brevis hallucis
Tendines extensoris longi digitorum
N. cutaneus dorsalis lateralis (continuation of N. suralis) (*cut*)
Aa. metatarseae dorsales
Aa. digitales dorsales
Nn. digitales plantares proprii; Aa. digitales plantares propriae
Tendo m. tibialis anterioris
A. tibialis anterior; N. fibularis profundus
Tibia
Tendo extensoris longi hallucis
Vagina tendinis extensoris longi digitorum
Malleolus medialis
Vagina tendinis m. tibialis anterioris
Vagina tendinis extensoris longi hallucis
A. malleolaris anterior medialis
A. dorsalis pedis; R. medialis n. fibularis profundi
A. tarsea medialis
A. arcuata
A. plantaris profunda (passing between heads of M. interosseus dorsalis 1 to join Arcus plantaris profundus)
Tendo extensoris longi hallucis
Aponeuroses extensoriae
Nn. digitales dorsales pedis (from N. fibularis profundus)
Nn. digitales dorsales pedis (from N. fibularis superficialis)
F. Netter M.D.

Dorsum of Foot: Deep Dissection

See also **Plate 527**

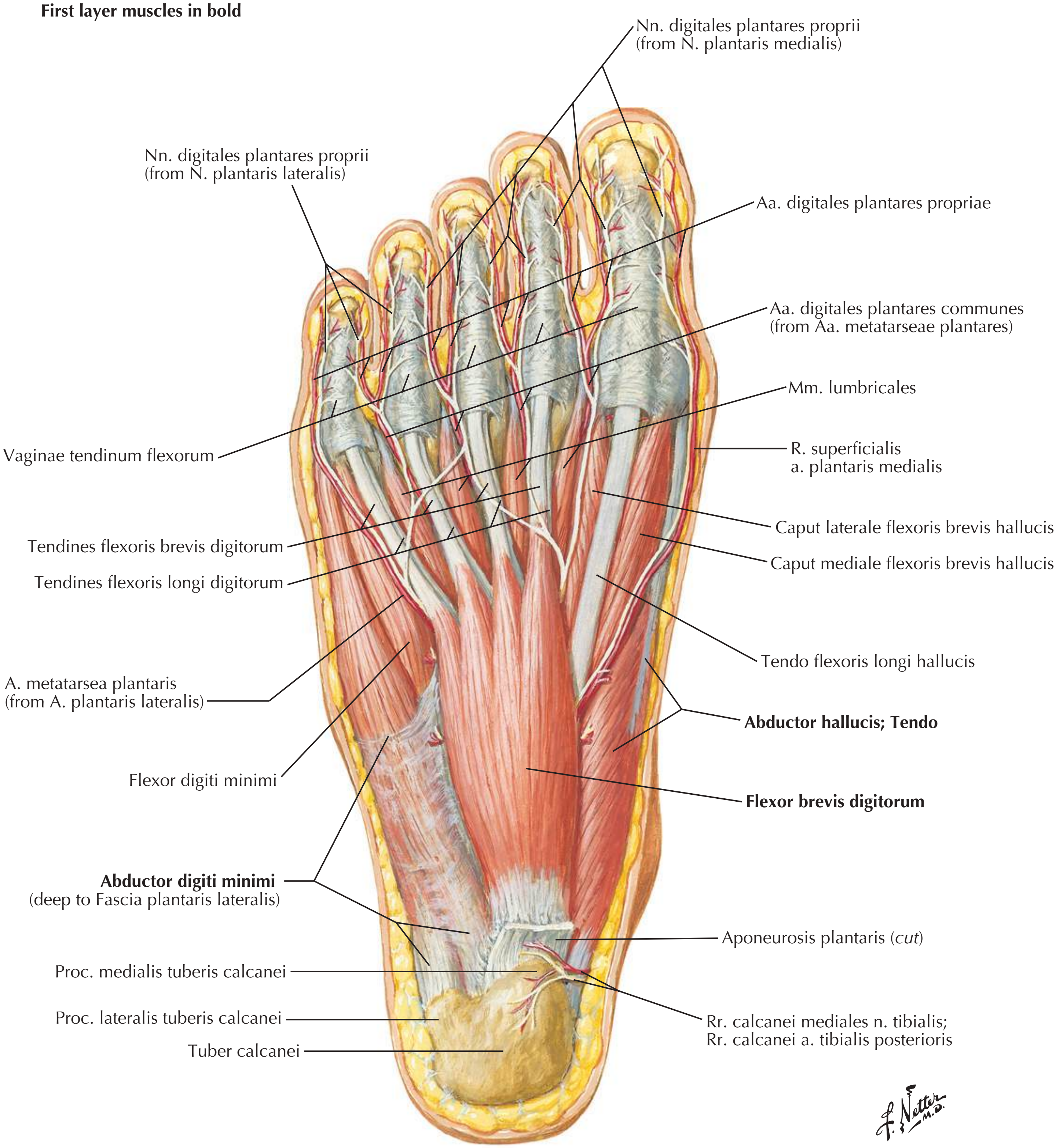

N. fibularis superficialis (*cut*)
Tendo m. fibularis longi
M. fibularis brevis; Tendo
Extensor longus digitorum; Tendo
Fibula
R. perforans a. fibularis
A. malleolaris anterior lateralis
Malleolus lateralis
A. tarsea lateralis; R. lateralis n. fibularis profundi (to muscles of dorsum pedis)
Tendo m. fibularis longi (*cut*)
Extensor brevis digitorum; Extensor brevis hallucis (*cut*)
Tendo m. fibularis brevis (*cut*)
Tendo m. fibularis tertii (*cut*)
Abductor digiti minimi
Aa. metatarseae dorsales
Ossa metatarsi
Mm. interossei dorsales
N. cutaneus dorsalis lateralis (continuation of N. suralis) (*cut*)
Rr. perforantes anteriores aa. metatarsearum plantarium
Aa. digitales dorsales
Aa. digitales plantares propriae; Nn. digitales plantares proprii
M. tibialis anterior; Tendo
Tibia
A. tibialis anterior; N. fibularis profundus
Extensor longus hallucis; Tendo
A. malleolaris anterior medialis
Malleolus medialis
R. medialis n. fibularis profundi
Aa. tarseae mediales
A. dorsalis pedis
A. arcuata
Rr. perforantes posteriores (from Arcus plantaris profundus)
A. plantaris profunda (to Arcus plantaris profundus)
Abductor hallucis
Tendo extensoris longi hallucis
Tendo extensoris brevis hallucis (*cut*)
Tendines extensoris brevis digitorum (*cut*)
Tendines extensoris longi digitorum (*cut*)
Aponeuroses extensoriae
Nn. digitales dorsales pedis (from N. fibularis profundus)
Nn. digitales dorsales pedis (from N. fibularis superficialis)
F. Netter M.D.


Lig. metatarseum transversum superficialis
Aa. digitales plantares propriae; Nn. digitales plantares proprii
R. superficialis a. plantaris medialis
Fasciculi transversi aponeurosis plantaris
Fasciculi longitudinales aponeurosis plantaris
Fascia plantaris lateralis
Fascia plantaris medialis
Rr. cutanei a. and n. plantaris lateralis
Rr. cutanei a. and n. plantaris medialis
Fasciculus lateralis aponeurosis plantaris (Lig. calcaneometatarseum)
Aponeurosis plantaris
Tuber calcanei; Overlying Corpus adiposus (*partially cut away*)
Rr. calcanei mediales n. tibialis; Rr. calcanei a. tibialis posterioris

Muscles of Plantar Region of Foot: First Layer

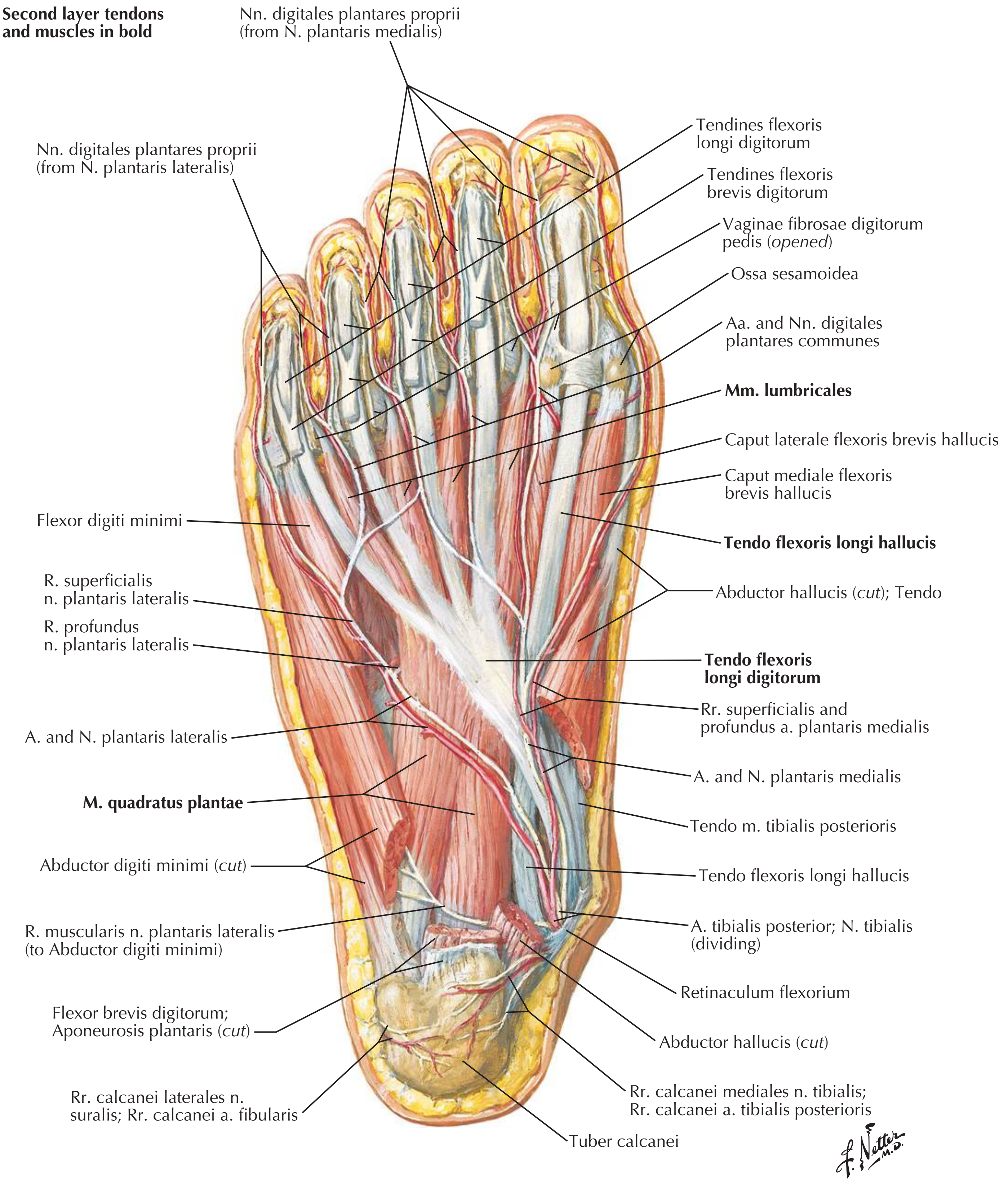
See also Plate 532

First layer muscles in bold

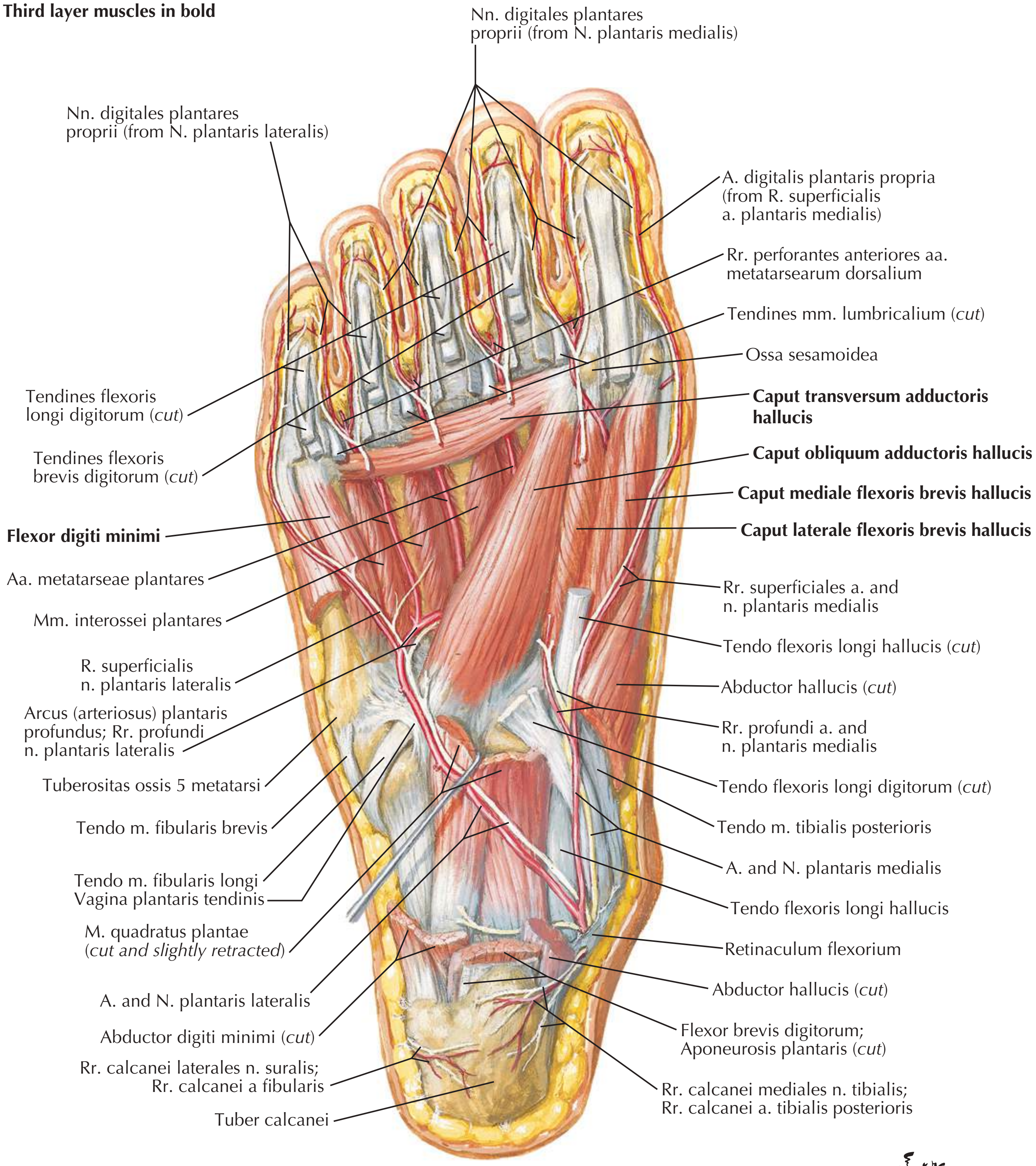

Nn. digitales plantares proprii (from N. plantaris medialis)
Nn. digitales plantares proprii (from N. plantaris lateralis)
Aa. digitales plantares propriae
Aa. digitales plantares communes (from Aa. metatarseae plantares)
Mm. lumbricales
Vaginae tendinum flexorum
R. superficialis a. plantaris medialis
Caput laterale flexoris brevis hallucis
Tendines flexoris brevis digitorum
Caput mediale flexoris brevis hallucis
Tendines flexoris longi digitorum
Tendo flexoris longi hallucis
A. metatarsea plantaris (from A. plantaris lateralis)
Abductor hallucis; Tendo
Flexor digiti minimi
Flexor brevis digitorum
Abductor digiti minimi (deep to Fascia plantaris lateralis)
Aponeurosis plantaris (*cut*)
Proc. medialis tuberis calcanei
Proc. lateralis tuberis calcanei
Rr. calcanei mediales n. tibialis; Rr. calcanei a. tibialis posterioris
Tuber calcanei

Muscles of Plantar Region of Foot: Second Layer

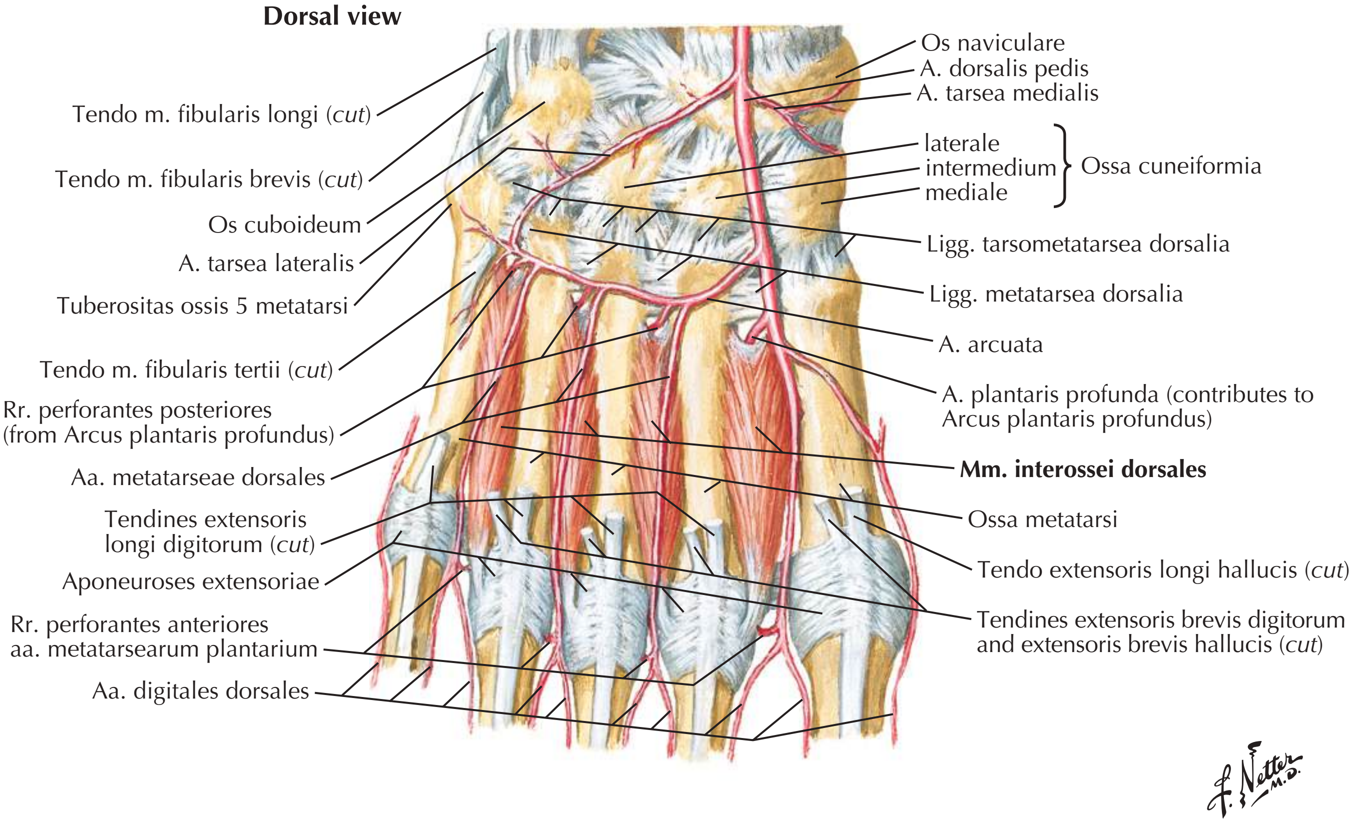
See also Plate 532

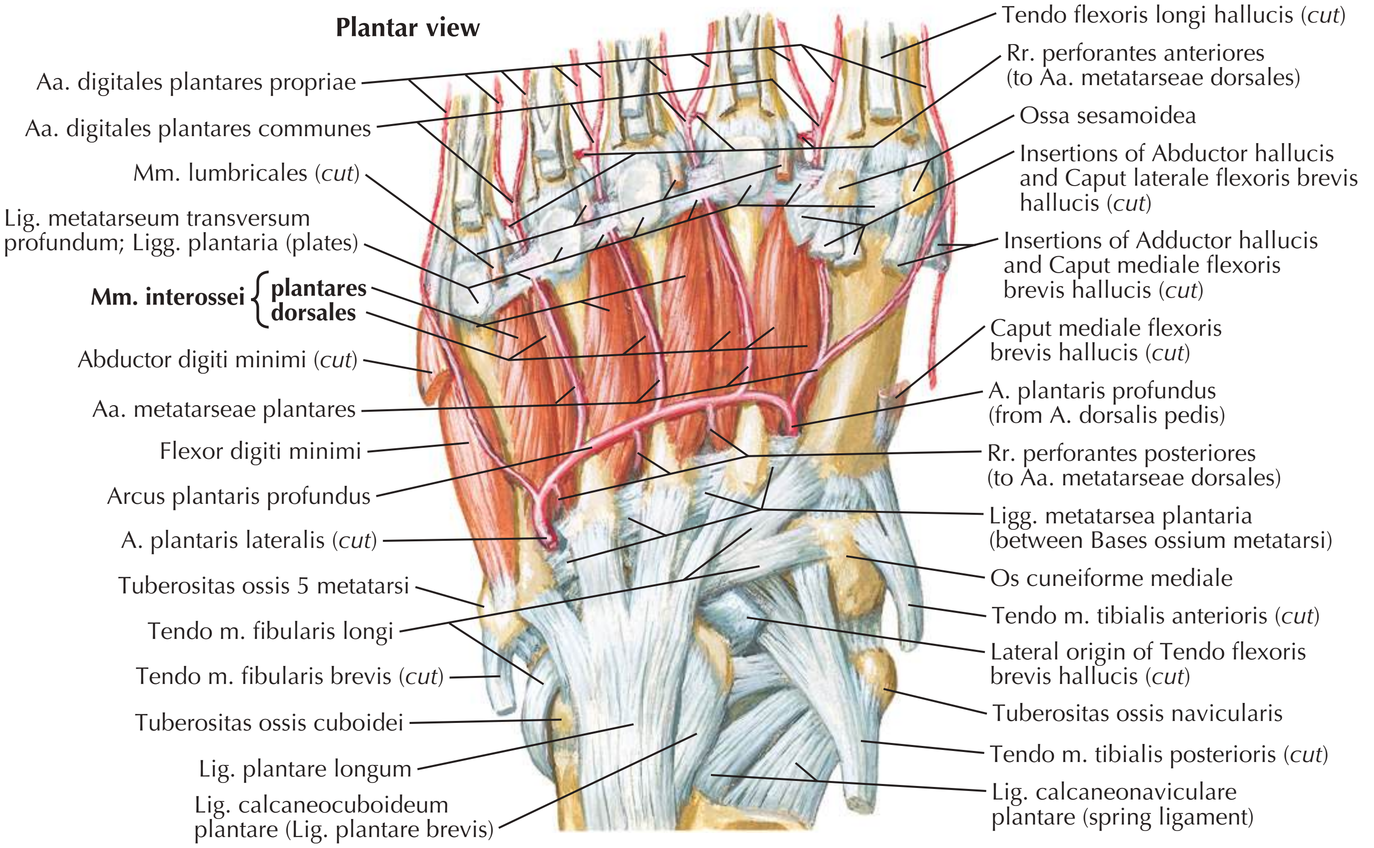

Second layer tendons and muscles in bold
Nn. digitales plantares proprii (from N. plantaris medialis)
Nn. digitales plantares proprii (from N. plantaris lateralis)
Tendines flexoris longi digitorum
Tendines flexoris brevis digitorum
Vaginae fibrosae digitorum pedis (*opened*)
Ossa sesamoidea
Aa. and Nn. digitales plantares communes
Mm. lumbricales
Caput laterale flexoris brevis hallucis
Caput mediale flexoris brevis hallucis
Flexor digiti minimi
Tendo flexoris longi hallucis
R. superficialis n. plantaris lateralis
Abductor hallucis (*cut*); Tendo
R. profundus n. plantaris lateralis
Tendo flexoris longi digitorum
Rr. superficialis and profundus a. plantaris medialis
A. and N. plantaris lateralis
A. and N. plantaris medialis
M. quadratus plantae
Tendo m. tibialis posterioris
Abductor digiti minimi (*cut*)
Tendo flexoris longi hallucis
R. muscularis n. plantaris lateralis (to Abductor digiti minimi)
A. tibialis posterior; N. tibialis (dividing)
Retinaculum flexorium
Flexor brevis digitorum; Aponeurosis plantaris (*cut*)
Abductor hallucis (*cut*)
Rr. calcanei laterales n. suralis; Rr. calcanei a. fibularis
Rr. calcanei mediales n. tibialis; Rr. calcanei a. tibialis posterioris
Tuber calcanei
F. Netter M.D.

Third layer muscles in bold


Nn. digitales plantares proprii (from N. plantaris medialis)
Nn. digitales plantares proprii (from N. plantaris lateralis)
A. digitalis plantaris propria (from R. superficialis a. plantaris medialis)
Rr. perforantes anteriores aa. metatarsearum dorsalium
Tendines mm. lumbricalium (*cut*)
Ossa sesamoidea
Tendines flexoris longi digitorum (*cut*)
Caput transversum adductoris hallucis
Tendines flexoris brevis digitorum (*cut*)
Caput obliquum adductoris hallucis
Caput mediale flexoris brevis hallucis
Flexor digiti minimi
Caput laterale flexoris brevis hallucis
Aa. metatarseae plantares
Rr. superficiales a. and n. plantaris medialis
Mm. interossei plantares
Tendo flexoris longi hallucis (*cut*)
R. superficialis n. plantaris lateralis
Abductor hallucis (*cut*)
Arcus (arteriosus) plantaris profundus; Rr. profundi n. plantaris lateralis
Rr. profundi a. and n. plantaris medialis
Tuberositas ossis 5 metatarsi
Tendo flexoris longi digitorum (*cut*)
Tendo m. fibularis brevis
Tendo m. tibialis posterioris
Tendo m. fibularis longi
Vagina plantaris tendinis
A. and N. plantaris medialis
Tendo flexoris longi hallucis
M. quadratus plantae (*cut and slightly retracted*)
Retinaculum flexorium
A. and N. plantaris lateralis
Abductor hallucis (*cut*)
Abductor digiti minimi (*cut*)
Flexor brevis digitorum; Aponeurosis plantaris (*cut*)
Rr. calcanei laterales n. suralis; Rr. calcanei a fibularis
Rr. calcanei mediales n. tibialis; Rr. calcanei a. tibialis posterioris
Tuber calcanei

See also Plates 512, 522, 526


Dorsal view
Tendo m. fibularis longi (*cut*)
Tendo m. fibularis brevis (*cut*)
Os cuboideum
A. tarsea lateralis
Tuberositas ossis 5 metatarsi
Tendo m. fibularis tertii (*cut*)
Rr. perforantes posteriores (from Arcus plantaris profundus)
Aa. metatarseae dorsales
Tendines extensoris longi digitorum (*cut*)
Aponeuroses extensoriae
Rr. perforantes anteriores aa. metatarsearum plantarium
Aa. digitales dorsales
Os naviculare
A. dorsalis pedis
A. tarsea medialis
laterale
intermedium
mediale
Ossa cuneiformia
Ligg. tarsometatarsea dorsalia
Ligg. metatarsea dorsalia
A. arcuata
A. plantaris profunda (contributes to Arcus plantaris profundus)
Mm. interossei dorsales
Ossa metatarsi
Tendo extensoris longi hallucis (*cut*)
Tendines extensoris brevis digitorum and extensoris brevis hallucis (*cut*)
F. Netter M.D.

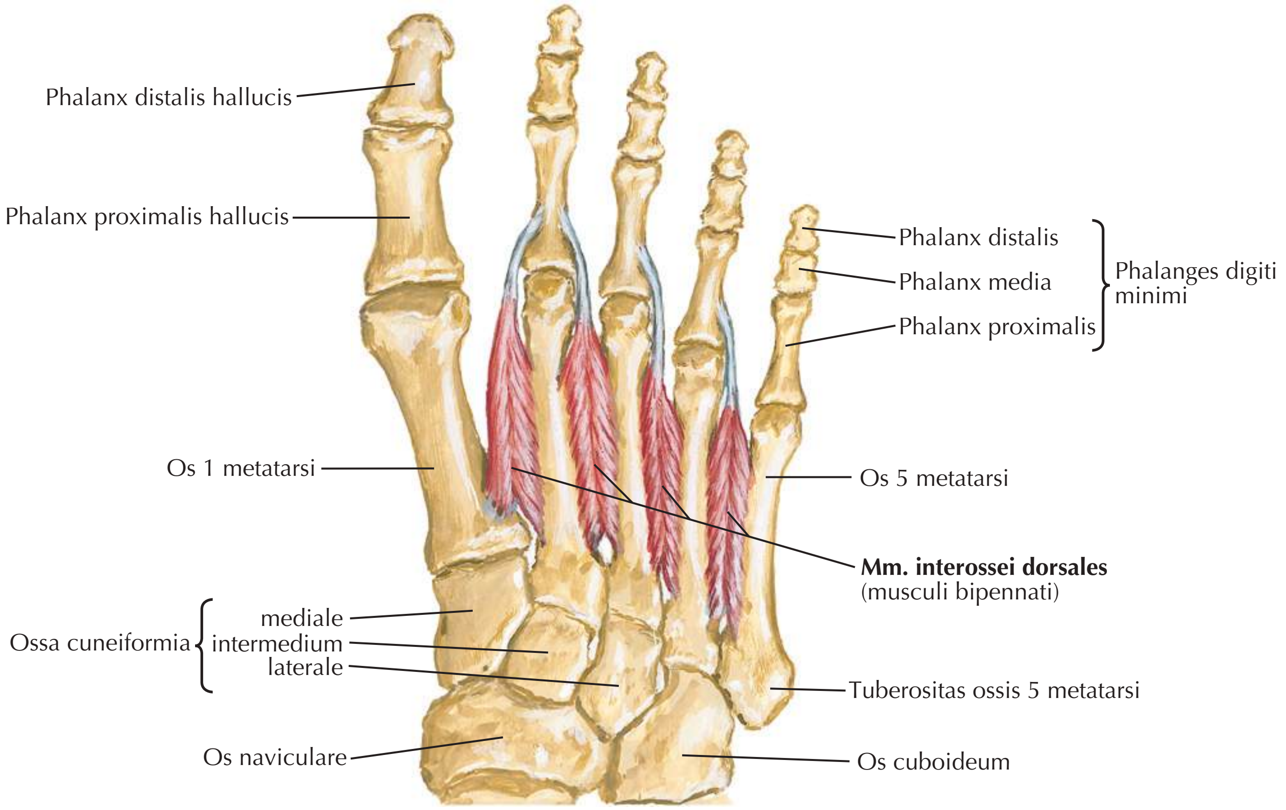

Plantar view
Aa. digitales plantares propriae
Aa. digitales plantares communes
Mm. lumbricales (*cut*)
Lig. metatarseum transversum profundum; Ligg. plantaria (plates)
Mm. interossei { **plantares**
dorsales
Abductor digiti minimi (*cut*)
Aa. metatarseae plantares
Flexor digiti minimi
Arcus plantaris profundus
A. plantaris lateralis (*cut*)
Tuberositas ossis 5 metatarsi
Tendo m. fibularis longi
Tendo m. fibularis brevis (*cut*)
Tuberositas ossis cuboidei
Lig. plantare longum
Lig. calcaneocuboideum plantare (Lig. plantare brevis)
Tendo flexoris longi hallucis (*cut*)
Rr. perforantes anteriores (to Aa. metatarseae dorsales)
Ossa sesamoidea
Insertions of Abductor hallucis and Caput laterale flexoris brevis hallucis (*cut*)
Insertions of Adductor hallucis and Caput mediale flexoris brevis hallucis (*cut*)
Caput mediale flexoris brevis hallucis (*cut*)
A. plantaris profundus (from A. dorsalis pedis)
Rr. perforantes posteriores (to Aa. metatarseae dorsales)
Ligg. metatarsea plantaria (between Bases ossium metatarsi)
Os cuneiforme mediale
Tendo m. tibialis anterioris (*cut*)
Lateral origin of Tendo flexoris brevis hallucis (*cut*)
Tuberositas ossis navicularis
Tendo m. tibialis posterioris (*cut*)
Lig. calcaneonaviculare plantare (spring ligament)

Fourth layer muscles in bold

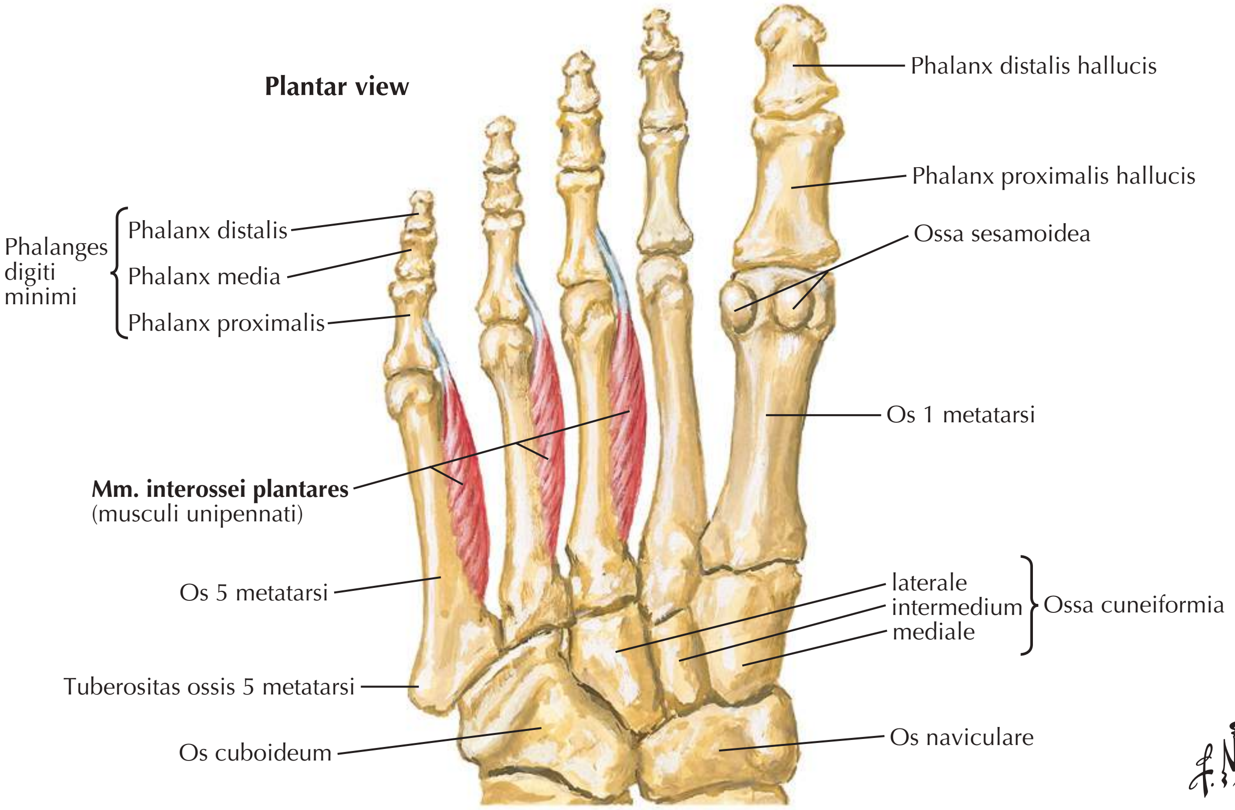
Interosseous Muscles of Foot

See also Plate 527

Dorsal view

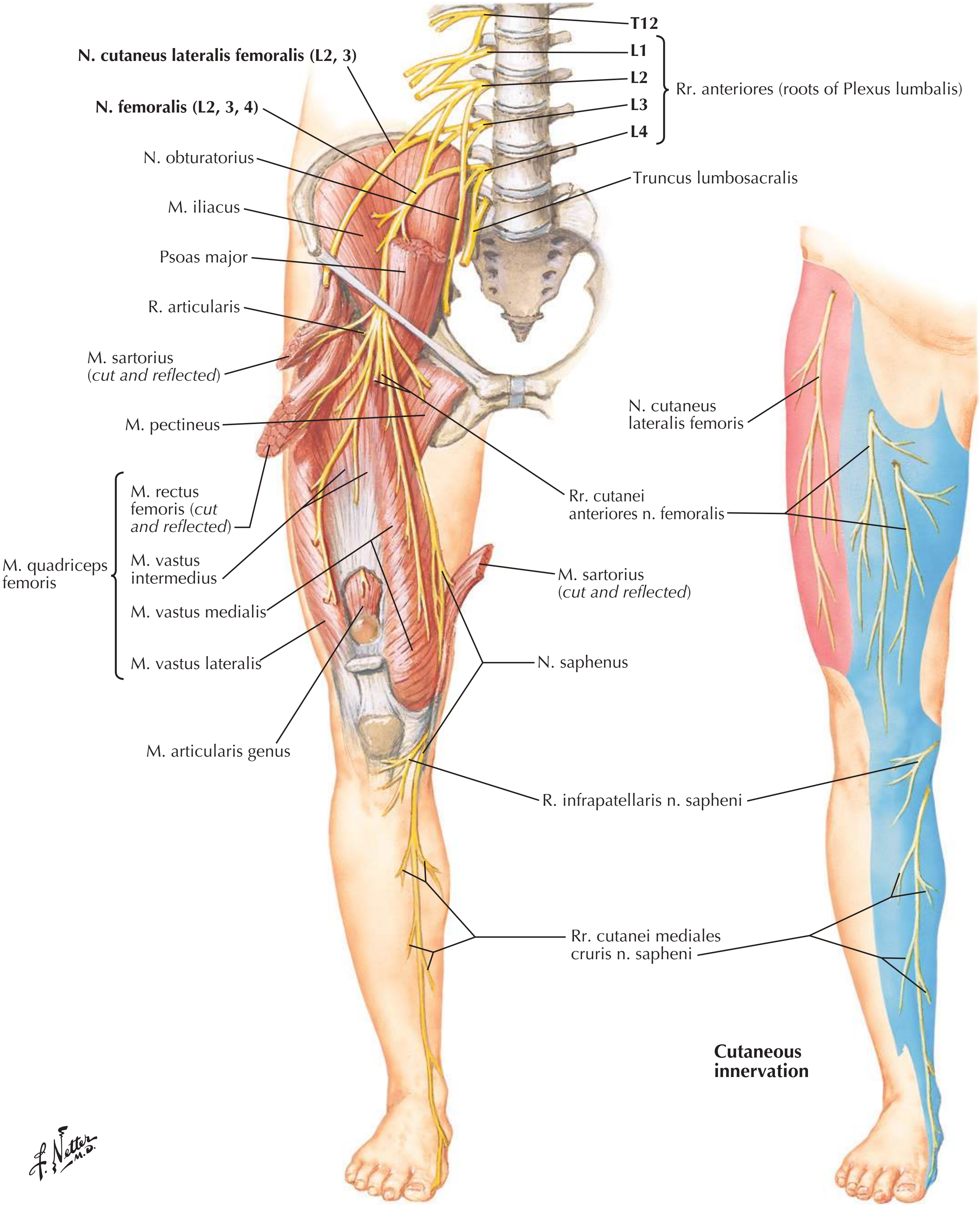

Phalanx distalis hallucis
Phalanx proximalis hallucis
Phalanx distalis
Phalanx media
Phalanx proximalis
Phalanges digiti minimi
Os 1 metatarsi
Os 5 metatarsi
Mm. interossei dorsales
(musculi bipennati)
mediale
intermedium
laterale
Ossa cuneiformia
Tuberositas ossis 5 metatarsi
Os naviculare
Os cuboideum

Plantar view

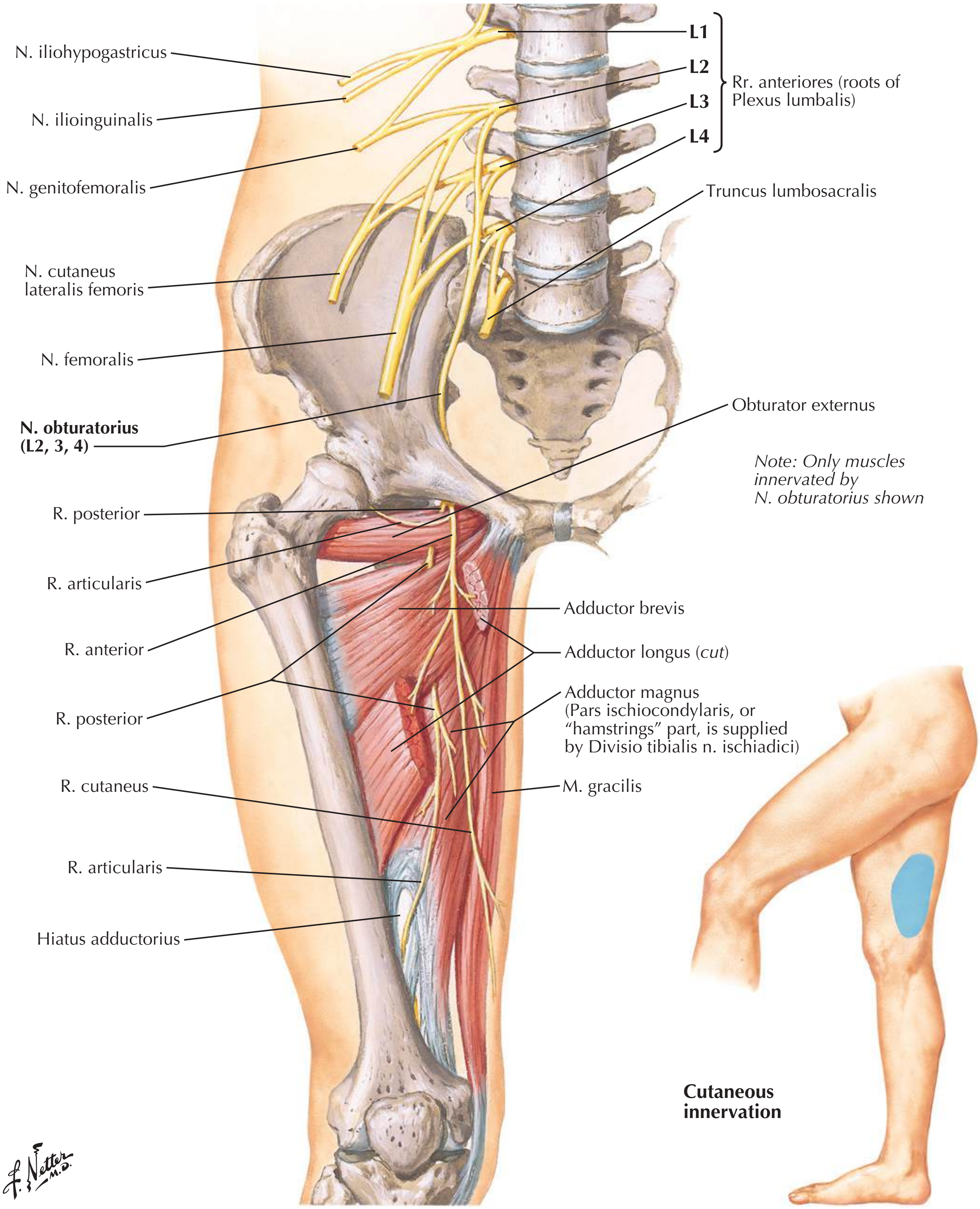

Phalanx distalis hallucis
Phalanx proximalis hallucis
Phalanges digiti minimi
Phalanx distalis
Phalanx media
Phalanx proximalis
Ossa sesamoidea
Os 1 metatarsi
Mm. interossei plantares
(musculi unipennati)
Os 5 metatarsi
laterale
intermedium
mediale
Ossa cuneiformia
Tuberositas ossis 5 metatarsi
Os cuboideum
Os naviculare

Femoral Nerve and Lateral Femoral Cutaneous Nerve

See also Plates 269, 490, 491


T12
L1
L2
L3
L4
Rr. anteriores (roots of Plexus lumbalis)
Truncus lumbosacralis
N. cutaneus lateralis femoralis (L2, 3)
N. femoralis (L2, 3, 4)
N. obturatorius
M. iliacus
Psoas major
R. articularis
M. sartorius (*cut and reflected*)
M. pectineus
M. quadriceps femoris
M. rectus femoris (*cut and reflected*)
M. vastus intermedius
M. vastus medialis
M. vastus lateralis
M. articularis genus
N. cutaneus lateralis femoris
Rr. cutanei anteriores n. femoralis
M. sartorius (*cut and reflected*)
N. saphenus
R. infrapatellaris n. sapheni
Rr. cutanei mediales cruris n. sapheni
Cutaneous innervation

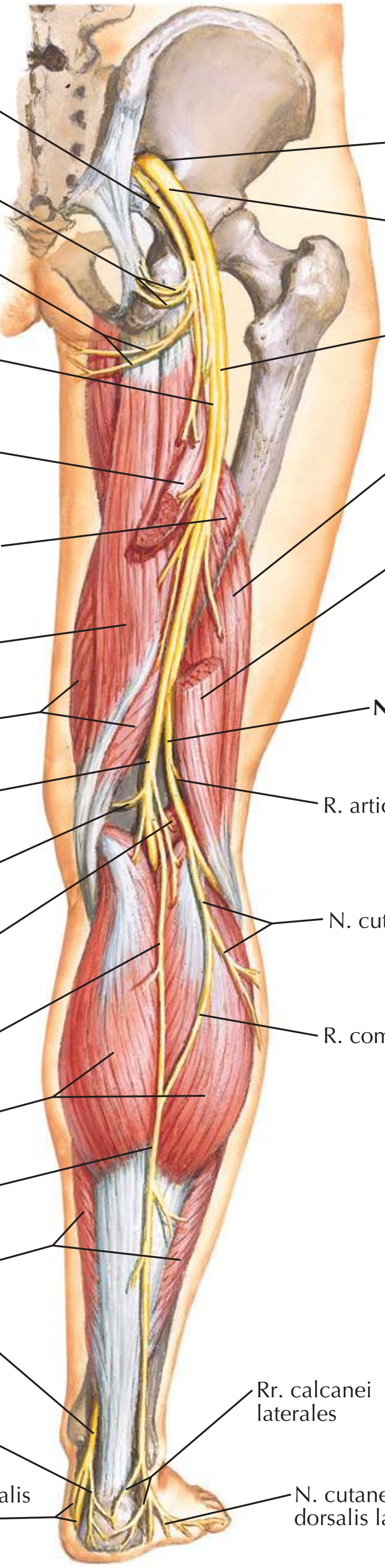
Obturator Nerve


N. iliohypogastricus
N. ilioinguinalis
N. genitofemoralis
N. cutaneus lateralis femoris
N. femoralis
N. obturatorius (L2, 3, 4)
R. posterior
R. articularis
R. anterior
R. posterior
R. cutaneus
R. articularis
Hiatus adductorius
L1
L2
L3
L4
Rr. anteriores (roots of Plexus lumbalis)
Truncus lumbosacralis
Obturator externus
Adductor brevis
Adductor longus (*cut*)
Adductor magnus (Pars ischiocondylaris, or "hamstrings" part, is supplied by Divisio tibialis n. ischiadici)
M. gracilis

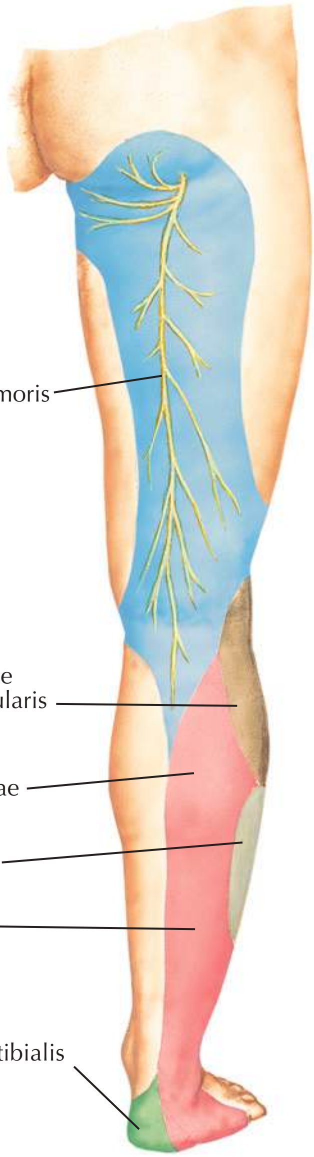
Note: Only muscles innervated by N. obturatorius shown

Cutaneous innervation

See also Plate 492

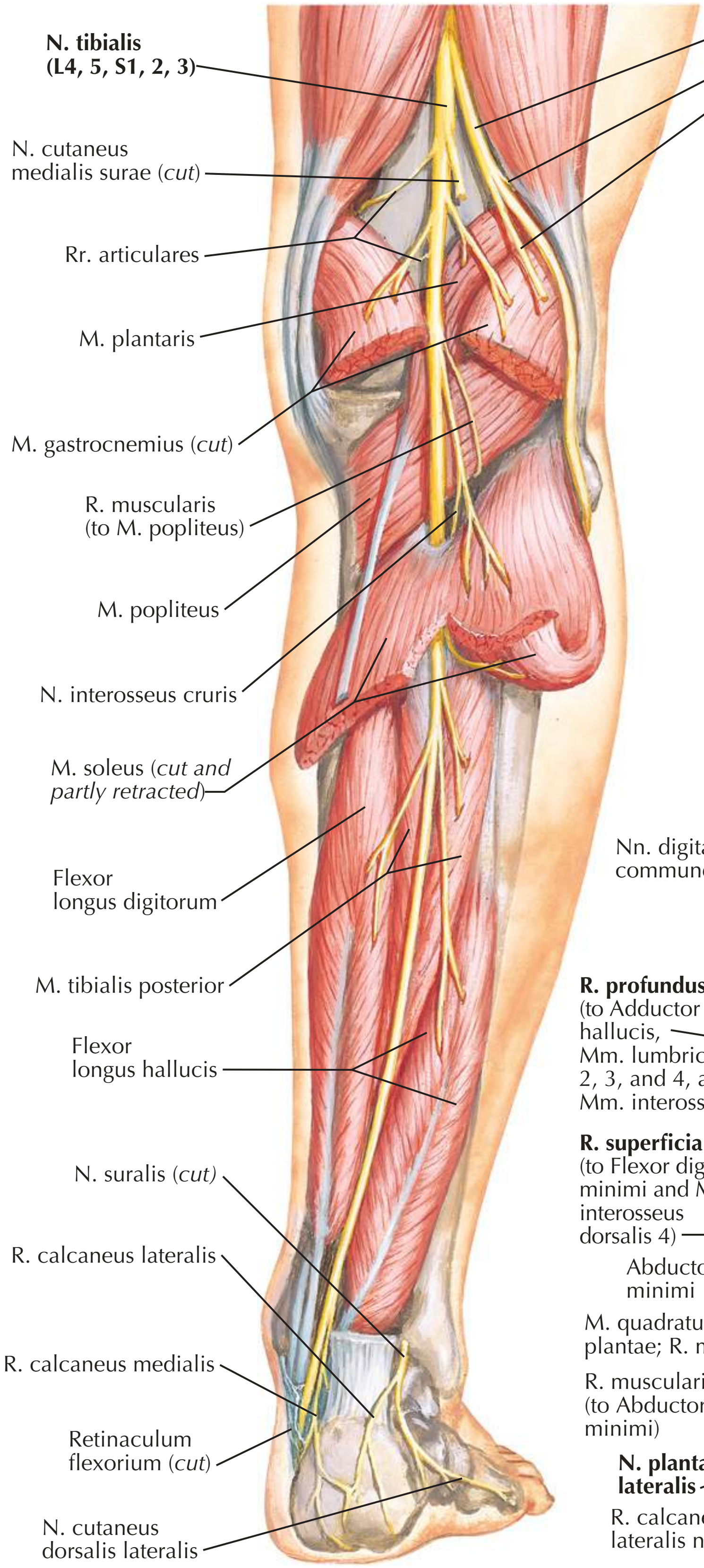

N. cutaneus posterior femoris (S1, 2, 3)
Nn. inferiores clunium
Rr. perineales
Divisio tibialis n. ischiadici (L4, 5, S1, 2, 3)
Caput longum m. bicipitis femoris (cut)
Adductor magnus (also supplied by N. obturatorius)
M. semitendinosus
M. semimembranosus
N. tibialis
R. articularis
M. plantaris
N. cutaneus medialis surae
M. gastrocnemius
N. suralis
M. soleus
N. tibialis
Rr. calcanei mediales
Nn. plantares lateralis and medialis
Foramen ischiadicum majus
N. ischiadicus (L4, 5, S1, 2, 3)
Divisio fibularis communis n. ischiadici (L4, 5, S1, 2)
Caput breve m. bicipitis femoris
Caput longum m. bicipitis femoris (cut)
N. fibularis communis
R. articularis
N. cutaneus lateralis surae
R. communicans suralis
Rr. calcanei laterales
N. cutaneus dorsalis lateralis

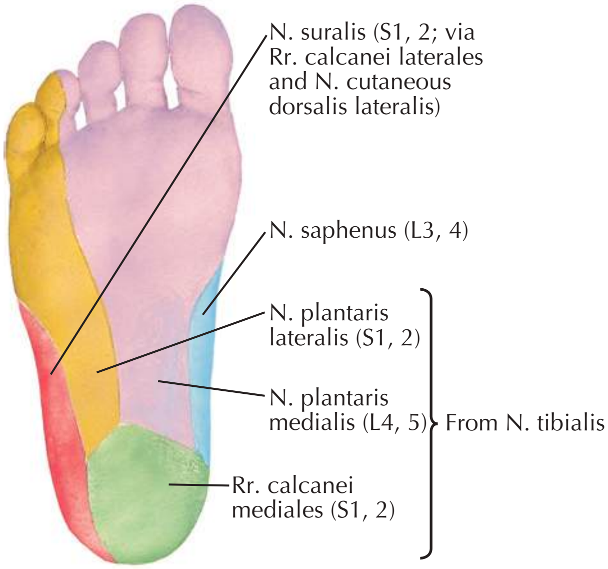
Cutaneous innervation


N. cutaneus posterior femoris
From N. ischiadicus
N. cutaneus lateralis surae (from N. fibularis communis)
N. cutaneus medialis surae
N. fibularis superficialis
N. suralis
Rr. calcanei mediales n. tibialis

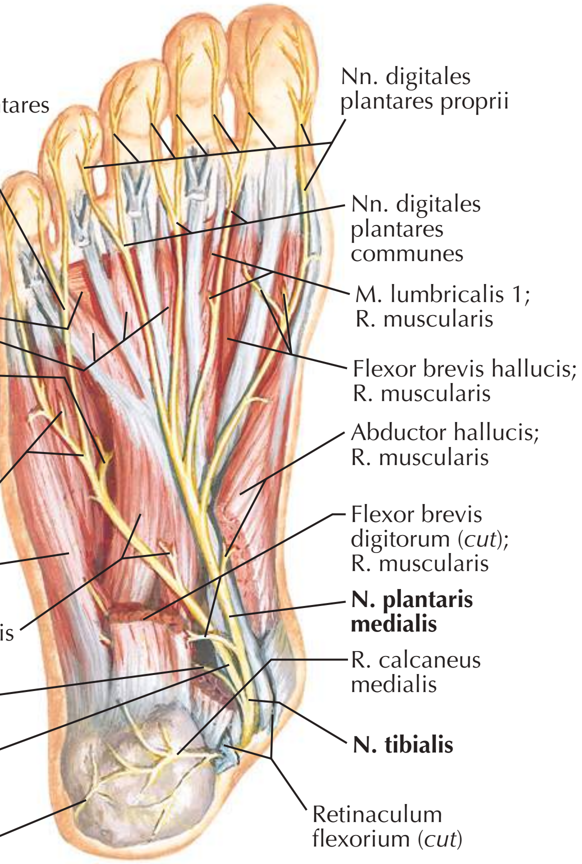
Tibial Nerve

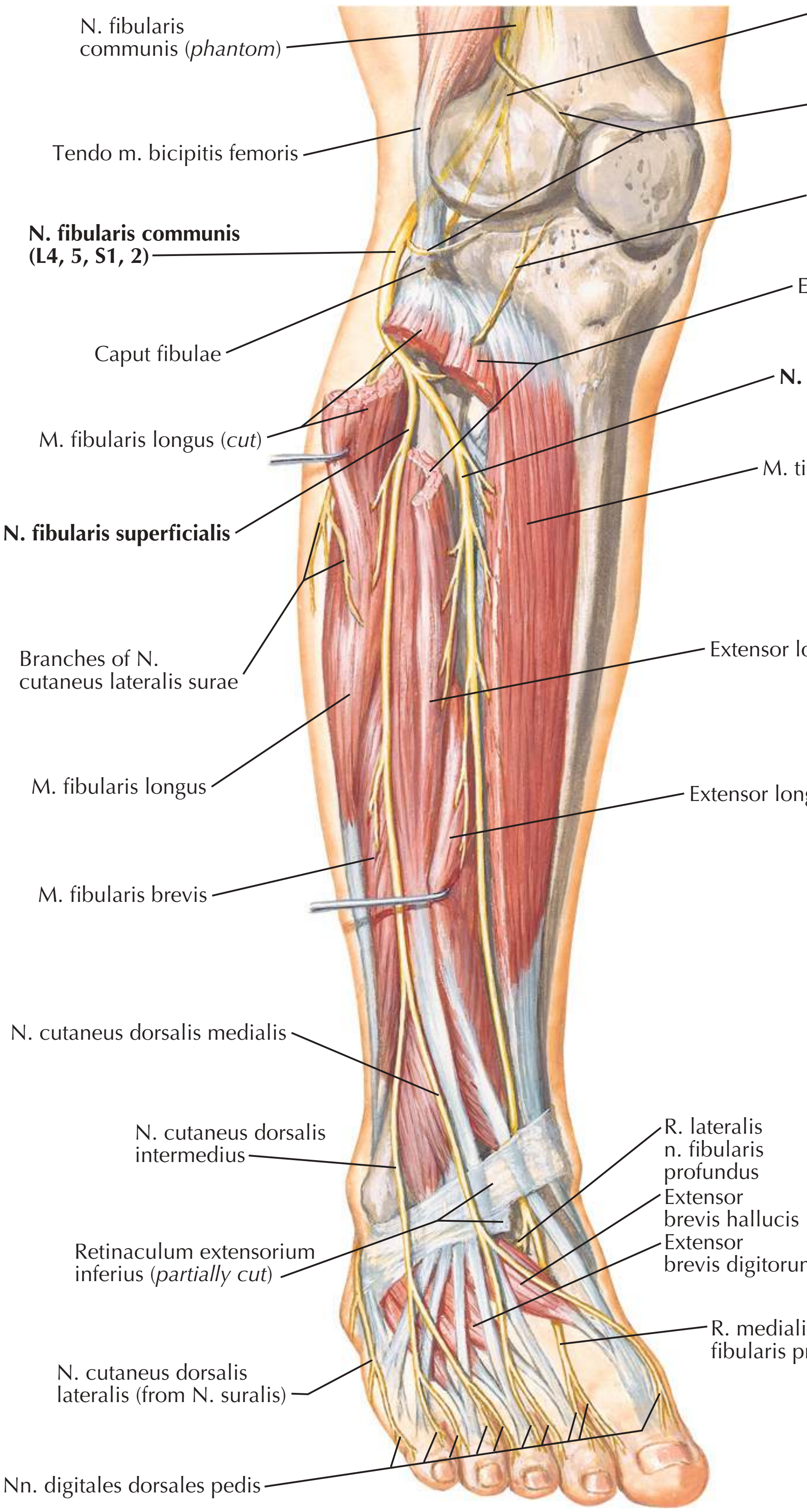
See also Plates 507, 524, 525


N. tibialis (L4, 5, S1, 2, 3)
N. fibularis communis
R. articularis
N. cutaneus lateralis surae (cut)
N. cutaneus medialis surae (cut)
Rr. articulares
M. plantaris
M. gastrocnemius (cut)
R. muscularis (to M. popliteus)
M. popliteus
N. interosseus cruris
M. soleus (cut and partly retracted)
Flexor longus digitorum
M. tibialis posterior
Flexor longus hallucis
N. suralis (cut)
R. calcaneus lateralis
R. calcaneus medialis
Retinaculum flexorium (cut)
N. cutaneus dorsalis lateralis
f. Netter M.D.

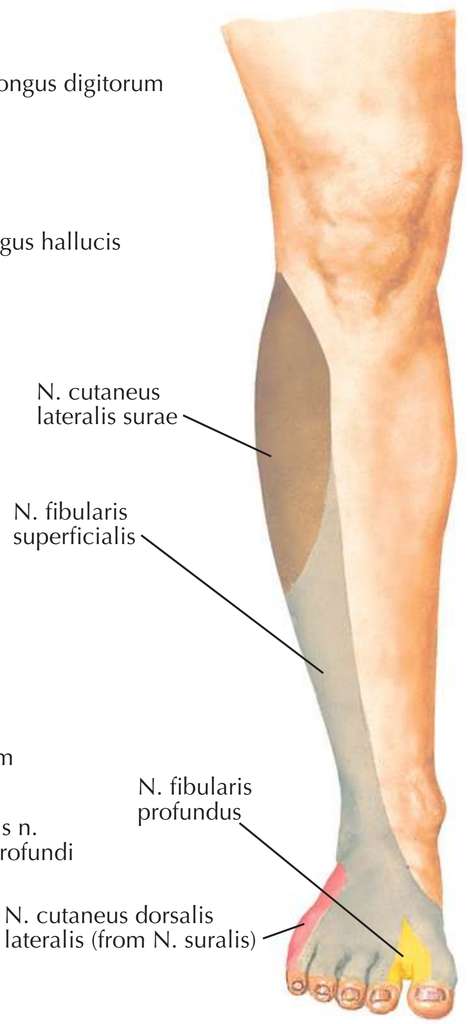

N. suralis (S1, 2; via Rr. calcanei laterales and N. cutaneous dorsalis lateralis)
N. saphenus (L3, 4)
N. plantaris lateralis (S1, 2)
N. plantaris medialis (L4, 5)
Rr. calcanei mediales (S1, 2)
From N. tibialis

Cutaneous innervation of plantar region


Nn. digitales plantares communes
Nn. digitales plantares proprii
Nn. digitales plantares communes
R. profundus (to Adductor hallucis, Mm. lumbricales 2, 3, and 4, and Mm. interossei)
M. lumbricalis 1; R. muscularis
Flexor brevis hallucis; R. muscularis
R. superficialis (to Flexor digiti minimi and M. interosseus dorsalis 4)
Abductor hallucis; R. muscularis
Abductor digiti minimi
Flexor brevis digitorum (cut); R. muscularis
M. quadratus plantae; R. muscularis
N. plantaris medialis
R. muscularis (to Abductor digiti minimi)
R. calcaneus medialis
N. tibialis
N. plantaris lateralis
R. calcaneus lateralis n. suralis
Retinaculum flexorium (cut)


N. fibularis communis (*phantom*)
N. cutaneus lateralis surae (*phantom*)
R. articularis
Tendo m. bicipitis femoris
R. articularis recurrens n. fibularis communis
N. fibularis communis (L4, 5, S1, 2)
Extensor longus digitorum (*cut*)
Caput fibulae
N. fibularis profundus
M. fibularis longus (*cut*)
M. tibialis anterior
N. fibularis superficialis
Branches of N. cutaneus lateralis surae
Extensor longus digitorum
M. fibularis longus
Extensor longus hallucis
M. fibularis brevis
N. cutaneus dorsalis medialis
N. cutaneus dorsalis intermedius
R. lateralis n. fibularis profundus
Extensor brevis hallucis
Extensor brevis digitorum
Retinaculum extensorium inferius (*partially cut*)
R. medialis n. fibularis profundi
N. cutaneus dorsalis lateralis (from N. suralis)
Nn. digitales dorsales pedis

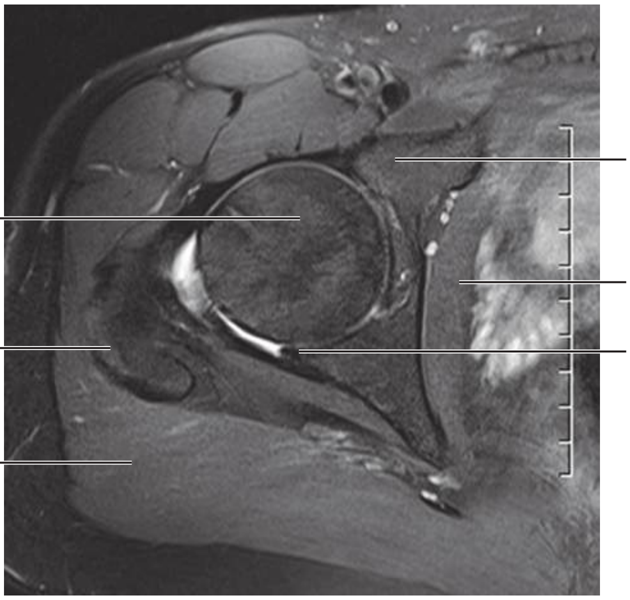
Cutaneous innervation


N. cutaneus lateralis surae
N. fibularis superficialis
N. fibularis profundus
N. cutaneus dorsalis lateralis (from N. suralis)

Hip MRI and 3D CT

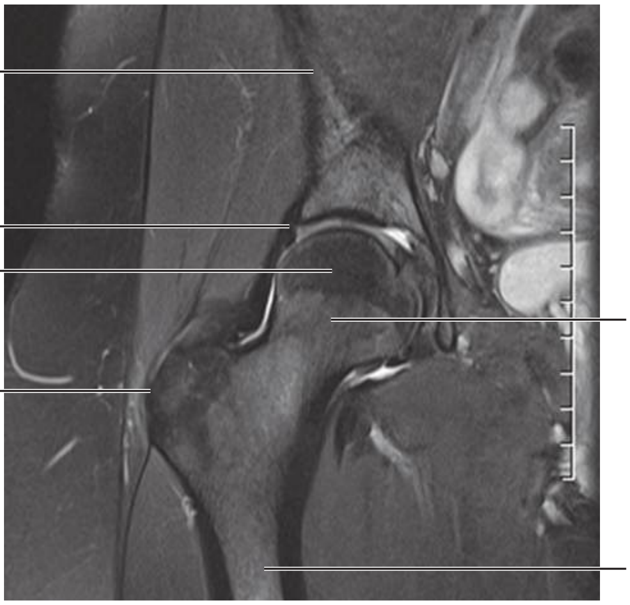
See also Plates 334, 400, 495

Axial T2-Weighted MRI



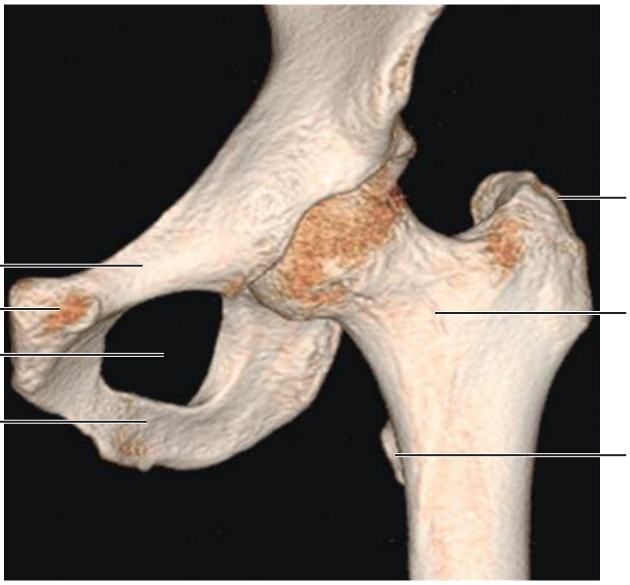
Labrum acetabuli
Caput ossis femoris
Obturator internus
Trochanter major
Labrum posterior
M. gluteus maximus

Coronal T2-Weighted MRI



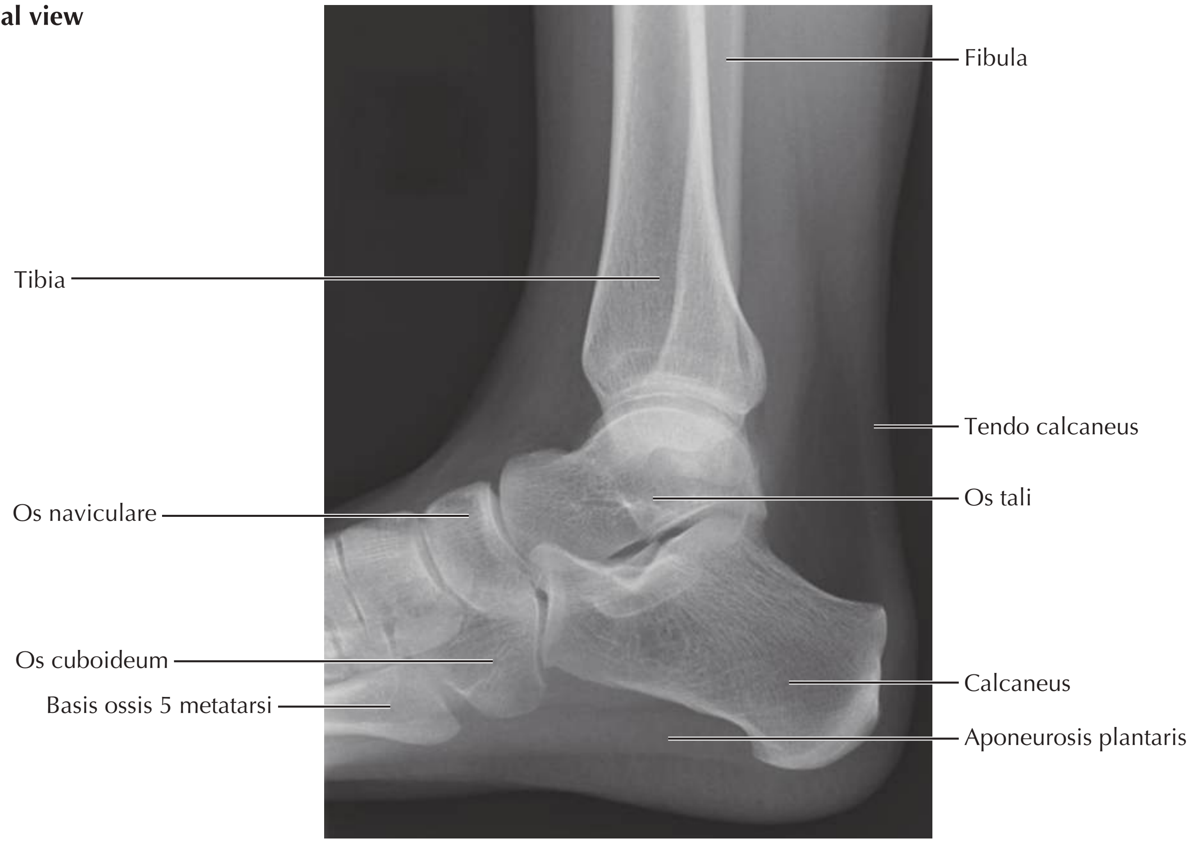
Ala ossis ilium
Labrum acetabuli
Caput ossis femoris
Collum ossis femoris
Trochanter major
Os femoris

3D CT of hip

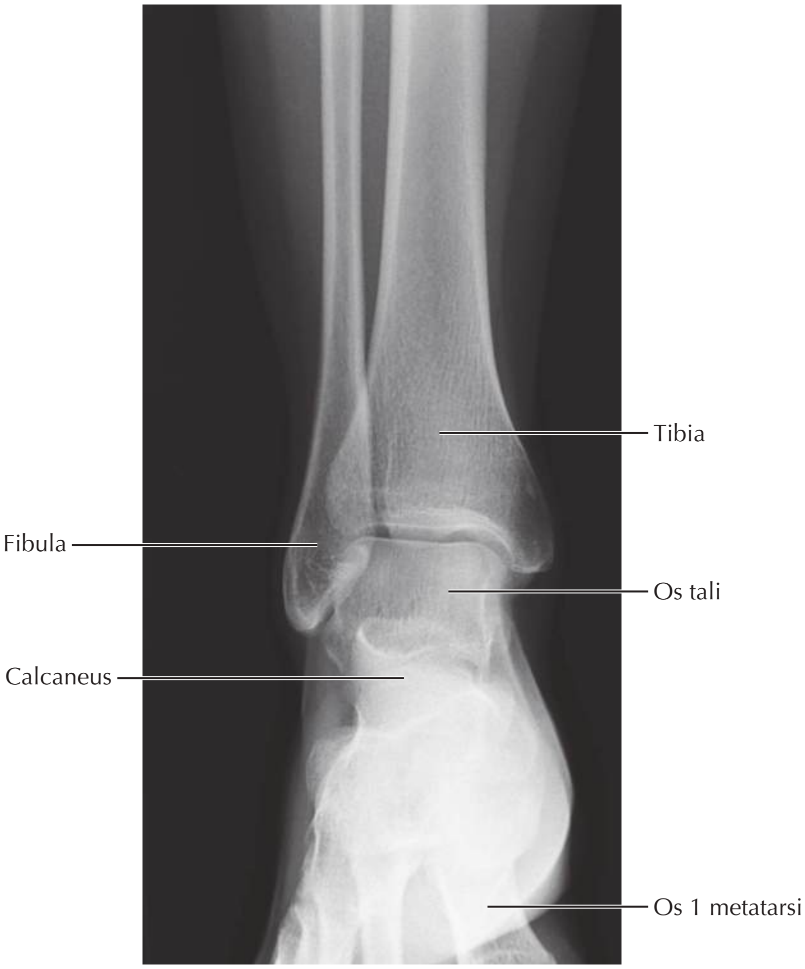


Trochanter major
Ramus superior ossis pubis
Tuberculum pubicum
Collum ossis femoris
Foramen obturatum
Ramus ischiopubicus
Trochanter minor

Lateral view


Fibula
Tibia
Tendo calcaneus
Os tali
Os naviculare
Os cuboideum
Calcaneus
Basis ossis 5 metatarsi
Aponeurosis plantaris

Anterior view


Tibia
Fibula
Os tali
Calcaneus
Os 1 metatarsi

Structures with High* Clinical Significance

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA SKELETALE		
Collum ossis femoris	Common fracture in elderly persons; can lead to avascular necrosis of caput femoris	478, 479, 495
Corpus ossis femoris	The midshaft is a common fracture site in high-energy trauma (motor vehicle accidents)	479
Articulatio coxae	Potential for vascular necrosis of caput femoris in hip dislocations or fractures	477, 495
Ligg. collaterale tibiale and cruciatum anterius; Meniscus medialis	"Unhappy triad" from blow to lateral aspect of joint in extension; damage to medial collateral and anterior cruciate ligaments, and medial meniscus	498, 499, 500
Tibia; Fibula	High-energy fractures of shaft (boot-top skiing fracture) from falling forward at high speed	504
Articulatio metatarsophalangea prima	Joint misalignment leading to hallux valgus (bunion), often result of wearing shoes that are too narrow; also, strong genetic component	515
Calcaneus	Most common tarsal bone fracture, usually caused by landing forcefully on heel after falling from height	517
Articulatio talocruralis	Most sprains are inversion injuries that occur when foot is plantarflexed; places stress on Lig. collaterale laterale of ankle	518
SYSTEMA MUSCULARE		
M. gracilis; Adductores longus, brevis, and magnus	Excessive stretching or tearing of thigh adductor muscles is common in sports that require repeated sprints or quick changes in direction (e.g., soccer, hockey)	482, 483
Lig. patellae	Striking patellar ligament with reflex hammer elicits patellar (knee jerk) reflex to test L3 to L4 spinal cord levels (innervation of M. quadriceps femoris by N. femoralis)	482, 498
Tractus iliotibialis	Commonly injured in runners as the tractus iliotibialis rubs across epicondylus lateralis ossis femoris	484, 497
Mm. semitendinosus, semimembranosus, and biceps femoris	Excessive stretching or tearing of hamstring muscles occurs most often during high-speed running or activities with high kicks	485
M. piriformis	Piriformis muscle strain or structural variations (e.g., split piriformis muscle) may produce compression of N. ischiadicus	492
Mm. glutei medius and minimus (N. gluteus superior)	Paralysis of these muscles results in contralateral pelvic dip due to weakened hip abduction when standing on affected limb (Trendelenburg sign or gait)	493
Tendo calcaneus (Achillis)	Inflammation results from repetitive stress on tendon, often from running on uneven surfaces; extreme stress may cause tendon to rupture	507, 508, 518
Tendo calcaneus (Achillis)	Striking tendon with reflex hammer elicits ankle (ankle jerk) reflex to test S1 to S2 spinal cord levels (innervation of superficial calf muscles by N. tibialis)	507, 508, 531
Compartimentum anterius cruris	Exertional compartment syndromes (midtibial pain; shin splints) usually result from excessive training (swelling, periostitis, or stress fractures occur because of tight fascial boundaries of muscle compartments)	514
Aponeurosis plantaris	Inflammation results from increased tension, weight, or overuse, causing heel and foot pain (plantar fasciitis; heel spur syndrome)	523

ANATOMICAL STRUCTURES	CLINICAL IMPORTANCE	PLATE NUMBERS
SYSTEMA NERVOSUM		
N. suralis	Nerve is commonly biopsied for peripheral neuropathies and commonly used as donor graft in neurotization	474, 531
N. fibularis communis	Injury to this nerve from blunt trauma or compression by leg cast weakens dorsiflexion and results in foot drop	529, 531, 533
N. obturatorius	Nerve is blocked or transected for adductor muscle spasticity in cerebral palsy; may be injured during pelvic fractures or pelvic surgical procedures such as lymphadenectomy	530
N. femoralis	Can be compressed from femoral hematoma and can be anesthetized for procedures of the lower limb	488, 490, 529
N. saphenus	Can be anesthetized in the canalis adductorius to provide pain relief after knee replacement	473, 490, 529
SYSTEMA CARDIOVASCULARE		
Vv. profundae membri inferioris	Deep venous thrombosis of deep leg veins is due to venous stasis, vessel injury, and/or coagulation disorders; can lead to thrombus formation and thromboemboli	513
V. saphena magna	Often used as coronary artery bypass grafts	473
Vv. superficiales membri inferioris	Varicose veins (dilated tortuous superficial veins connected by perforating veins to deeper veins with incompetent venous valves)	513
A. femoralis in trigonum femorale; A. poplitea in pars profunda poplitis; A. dorsalis pedis on dorsum pedis; A. tibialis posterior in sulcus malleolaris tibiae	Lower limb pulse points	490, 503, 508, 513
Aa. majores membri inferioris (Aa. femoralis, poplitea, tibialis anterior, tibialis posterior, and fibularis)	Peripheral arterial disease due to atherosclerosis may occur in major arteries of lower limb, resulting in reduced blood flow; patients experience claudication (cramping pain in thigh or calf), especially upon exertion	503
SYSTEMA LYMPHATICUM		
Nodi lymphoidei inguinales superficiales	Superficial inguinal nodes drain lower limb, gluteal region, lower abdominal region, and perineum; are palpable when enlarged	475
Vasa lymphatica membri inferioris	Lymphedema (stasis of lymph flow in lymph vessels obstructed by inflammation, fibrosis, tumor, or abnormally small diameter)	475

*Selections were based largely on clinical data as well as commonly covered clinical correlations in gross anatomy courses.

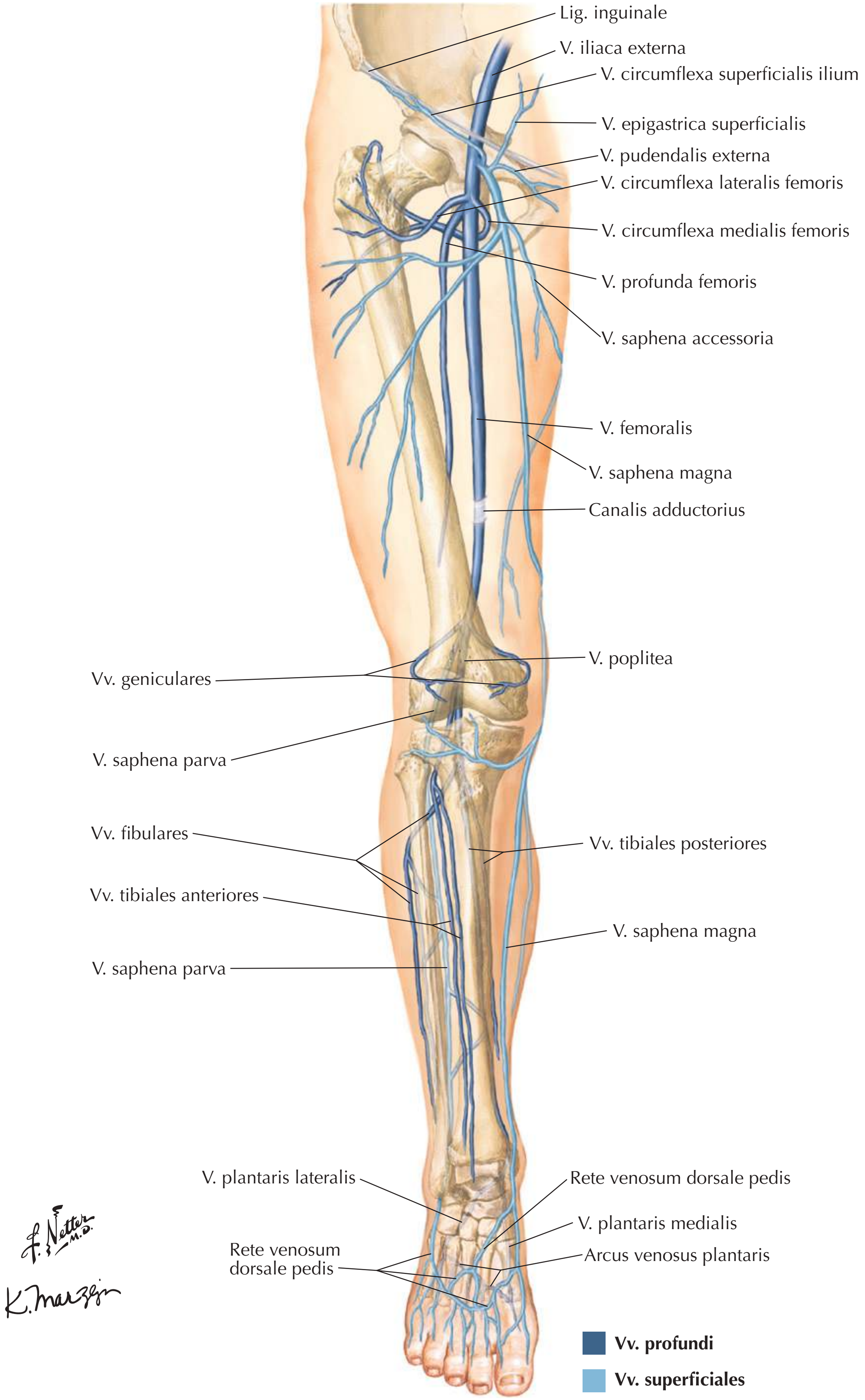
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Abductor digiti minimi	Mm. pedis	Procc. medialis and lateralis tuberis calcanei; Aponeurosis plantaris; Septum intermusculare	Lateral side of basis phalangis proximalis digiti minimi	N. plantaris lateralis	A. plantaris lateralis; Aa. metatarsea plantaris and digitalis plantaris to digitus minimus	Abducts and flexes 5th digit
Abductor hallucis	Mm. pedis	Proc. medialis tuberis calcanei; Retinaculum flexorum; Aponeurosis plantaris	Medial side of basis phalangis proximalis hallucis	N. plantaris medialis	A. plantaris medialis; A. metatarsea plantaris to hallux	Abducts and flexes 1st digit
Adductor brevis	Compartimentum mediale femoris	Corpus and ramus inferior ossis pubis	Linea pectinea ossis femoris; Proximal part of linea aspera	N. obturatorius	Aa. profunda femoris, circumflexa medialis femoris and obturatoria	Adducts thigh at hip, weak hip flexor
Adductor hallucis	Mm. pedis	*Caput obliquum*: Bases ossium 2-4 metatarsi *Caput transversum*: Ligg. articulationum metatarsophalangearum digitorum 3–5	*Tendons of both heads*: Lateral side of basis phalangis proximalis hallucis	N. plantaris lateralis (R. profundus)	Aa. plantares medialis and lateralis; Arcus plantaris; Aa. metatarseae plantares	Adducts 1st digit, maintains transverse arch of foot
Adductor longus	Compartimentum mediale femoris	Corpus ossis pubis, inferior to crista pubica	Middle third of linea aspera ossis femoris	N. obturatorius (Divisio anterior)	Aa. profunda femoris and circumflexa medialis femoris	Adducts thigh at hip
Adductor magnus	Compartimentum mediale femoris	*Pars adductoria*: Ramus ischiopubicus (Ramus inferior ossis pubis; Ramus ossis ischii) *Pars ischiocondylaris* (*Hamstring part*): Tuber ischiadicum	*Pars adductoria*: Tuberositas glutea; Linea aspera; Linea supracondylaris medialis *Pars ischiocondylaris*: Tuberculum adductorium ossis femoris	*Pars adductoria*: N. obturatorius *Pars ischiocondylaris*: N. ischiadicus (Divisio tibialis)	Aa. femoralis, profunda femoris and obturatoria	*Adductor part*: adducts and flexes thigh *Hamstring part*: extends thigh
M. articularis genus	Compartimentum anterius femoris	Distal facies anterior ossis femoris	Bursa suprapatellaris	N. femoralis	Aa. femoralis	Pulls suprapatellar bursa superiorly with extension of knee
M. biceps femoris	Compartimentum posterius femoris	*Caput longum*: Tuber ischiadicum *Caput breve*: Linea aspera; Linea supracondylaris lateralis ossis femoris	Lateral side of caput fibulae	*Caput longum*: N. ischiadicus (Divisio tibialis) *Caput breve*: N. ischiadicus (Divisio fibularis communis)	Rr. perforantes a. profundae femoris; Aa. glutea inferior and circumflexa medialis femoris	Flexes and laterally rotates leg, extends thigh at hip
Extensor brevis digitorum and Extensor brevis hallucis	Mm. pedis	Facies superolateralis calcanei; Lig. talocalcaneum laterale; Deep surface of retinaculum extensorum inferius	*Extensor brevis hallucis*: Dorsal surface of basis phalangis proximalis hallucis *Extensor brevis digitorum*: Lateral sides of tendines extensoris longi digitorum 2-4	N. fibularis profundus	Aa. dorsalis pedis, tarsea lateralis, arcuata and fibularis	Aids extensor longus digitorum in extending of 4 medial digits at metatarsophalangeal and interphalangeal joints
Extensor longus digitorum	Compartimentum anterius cruris	Condylus lateralis tibiae; Proximal 3/4 of facies medialis fibulae; Membrana interossea	Phalanges mediae and distales digitorum 2-5	N. fibularis profundus	A. tibialis anterior	Extends lateral four digits and dorsiflexes foot at ankle
Extensor longus hallucis	Compartimentum anterius cruris	Middle part of facies medialis fibulae; Membrana interossea	Dorsal aspect of basis phalangis distalis hallucis	N. fibularis profundus	A. tibialis anterior	Extends great toe, dorsiflexes foot at ankle
M. fibularis brevis	Compartimentum laterale cruris	Distal 2/3 of facies lateralis fibulae	Dorsal surface of tuberositas ossis 5 metatarsi	N. fibularis superficialis	Aa. tibialis anterior and fibularis	Everts foot and weakly plantarflexes foot at ankle
M. fibularis longus	Compartimentum laterale cruris	Caput fibulae; Proximal 2/3 of facies lateralis fibulae	Plantar surfaces of basis ossis 1 metatarsi and os cuneiforme mediale	N. fibularis superficialis	Aa. tibialis anterior and fibularis	Everts foot and weakly plantarflexes foot at ankle

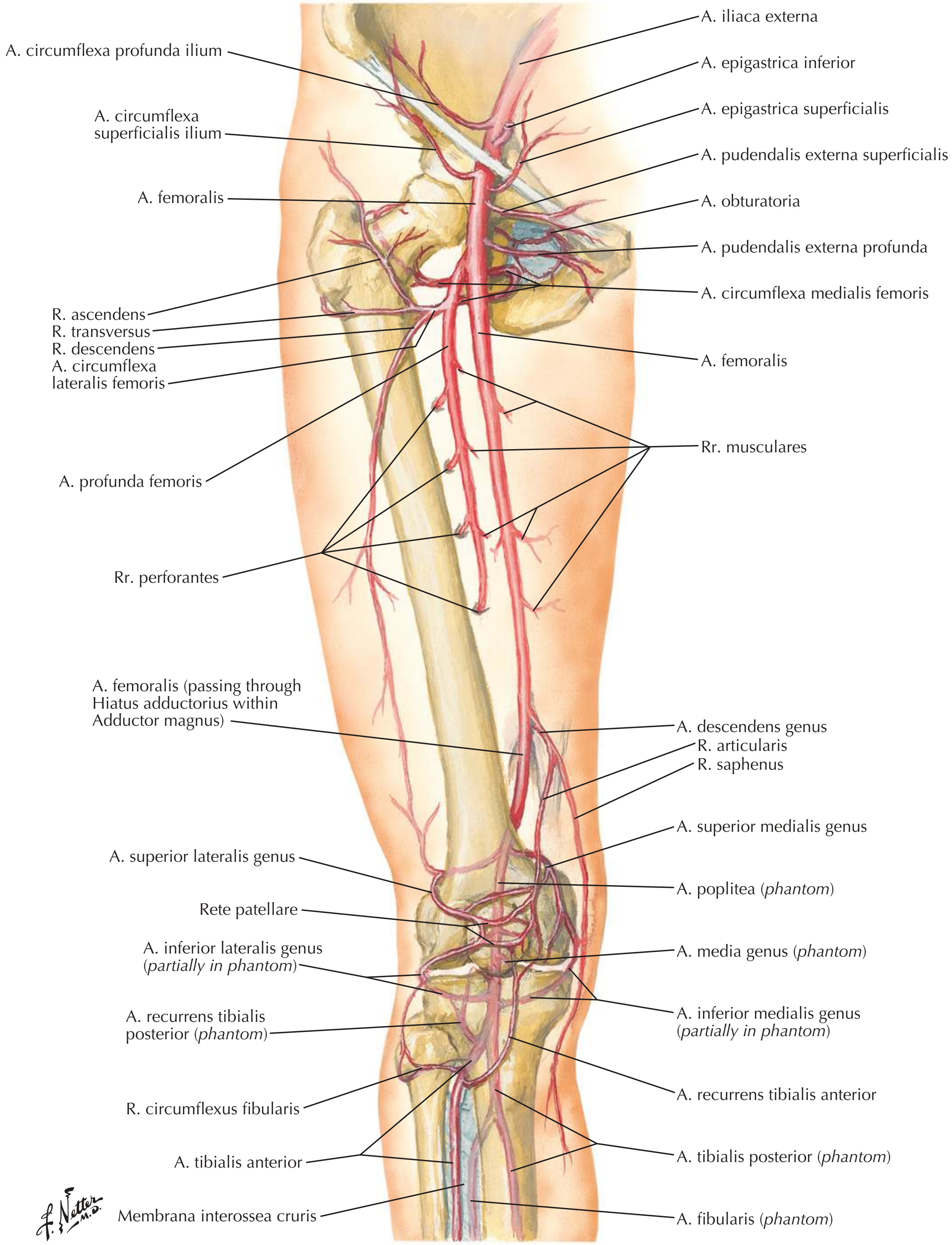
Variations in spinal nerve contributions to the innervation of muscles, their arterial supply, their attachments, and their actions are common themes in human anatomy. Therefore, expect differences between texts and realize that anatomic variation is normal.

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. fibularis tertius	Compartimentum anterius cruris	Distal third of facies medialis fibulae; Membrana interossea	Dorsum of basis ossis 5 metatarsi	N. fibularis profundus	A. tibialis anterior	Dorsiflexes foot at ankle and aids in eversion of foot
Flexor brevis digitorum	Mm. pedis	Proc. medialis tuberis calcanei; Aponeurosis plantaris; Septum intermusculare	Both sides of phalanges mediae digitorum 2-5	N. plantaris medialis	Aa. plantares medialis and lateralis; Arcus plantaris; Aa. metatarseae plantares and digitales plantares	Flexes 2nd through 5th digits
Flexor brevis hallucis	Mm. pedis	Plantar surfaces of os cuboideum and os cuneiforme laterale	Both sides of basis phalangis proximalis hallucis	N. plantaris medialis	A. plantaris medialis; A. metatarsea plantaris to hallux	Flexes proximal phalanx of 1st digit
Flexor digiti minimi	Mm. pedis	Basis ossis 5 metatarsi	Lateral side of basis phalangis proximalis digiti minimi	N. plantaris lateralis (R. superficialis)	Aa. plantaris lateralis and arcuata; A. digitalis plantaris to digitus minimus	Flexes proximal phalanx of 5th digit
Flexor longus digitorum	Compartimentum posterius cruris	Medial part of facies posterior tibiae, inferior to linea solea	Plantar side of bases phalangium distalium digitorum 2-5	N. tibialis	Aa. tibialis posterior	Flexes lateral four digits and plantarflexes foot at ankle; supports longitudinal arches of foot
Flexor longus hallucis	Compartimentum posterius cruris	Distal 2/3 of facies posterior fibulae; Membrana interossea	Basis phalangis distalis hallucis	N. tibialis	A. fibularis	Flexes all joints of great toe, weakly plantarflexes foot at ankle
M. gastrocnemius	Compartimentum posterius cruris	*Caput laterale*: Facies lateralis condyli lateralis ossis femoris *Caput mediale*: Facies poplitea ossis femoris, above condylus medialis	Tuber calcanei via tendo calcaneus	N. tibialis	Aa. poplitea and tibialis posterior	Plantarflexes foot at ankle joint, assists in flexion of knee joint
M. gluteus maximus	Mm. glutei	Os ilium, posterior to linea glutea posterior; Facies dorsales ossium sacri and coccygis; Lig. sacrotuberale	Most fibers end in tractus iliotibialis that inserts into condylus lateralis tibiae; Some fibers insert into tuberositas glutea ossis femoris	N. gluteus inferior	A. glutea inferior (mainly); A. glutea superior (occasionally)	Extends flexed thigh, assists in lateral rotation, and abducts thigh
M. gluteus medius	Mm. glutei	Facies lateralis ossis ilium, between lineae gluteae anterior and posterior	Lateral surface of trochanter major ossis femoris	N. gluteus superior	A. glutea superior	Abducts and medially rotates thigh at hips; steadies pelvis on leg when opposite leg is raised
M. gluteus minimus	Mm. glutei	Facies lateralis ossis ilium, between lineae gluteae anterior and inferior	Anterior surface of trochanter major ossis femoris	N. gluteus superior	A. glutea superior (Main trunk and R. profundus)	Abducts and medially rotates thigh at hips; steadies pelvis on leg when opposite leg is raised
M. gracilis	Compartimentum mediale femoris	Corpus and ramus inferior ossis pubis	Superior part of facies medialis tibiae	N. obturatorius	Aa. profunda femoris and circumflexa medialis femoris	Adducts thigh, flexes and medially rotates leg
M. iliacus	Iliopsoas	Superior 2/3 of fossa iliaca; Ala ossis sacri; Ligg. sacroiliaca anteriora	Trochanter minor ossis femoris and corpus ossis femoris inferior to it, to tendo psoae majoris	N. femoralis	Rr. iliaci a. iliolumbalis	Flexes thigh at hips and stabilizes hip joint, acts with psoas major
M. gemellus inferior	Mm. glutei	Tuber ischiadicum	Medial surface of trochanter major ossis femoris	N. musculi quadrati femoris	A. circumflexa medialis femoris	Laterally rotates extended thigh and abducts flexed thigh
M. gemellus superior	Mm. glutei	Outer surface of spina ischiadica	Medial surface of trochanter major ossis femoris	N. obturatorii interni	Aa. glutea inferior and pudendalis interna	Laterally rotates extended thigh and abducts flexed thigh

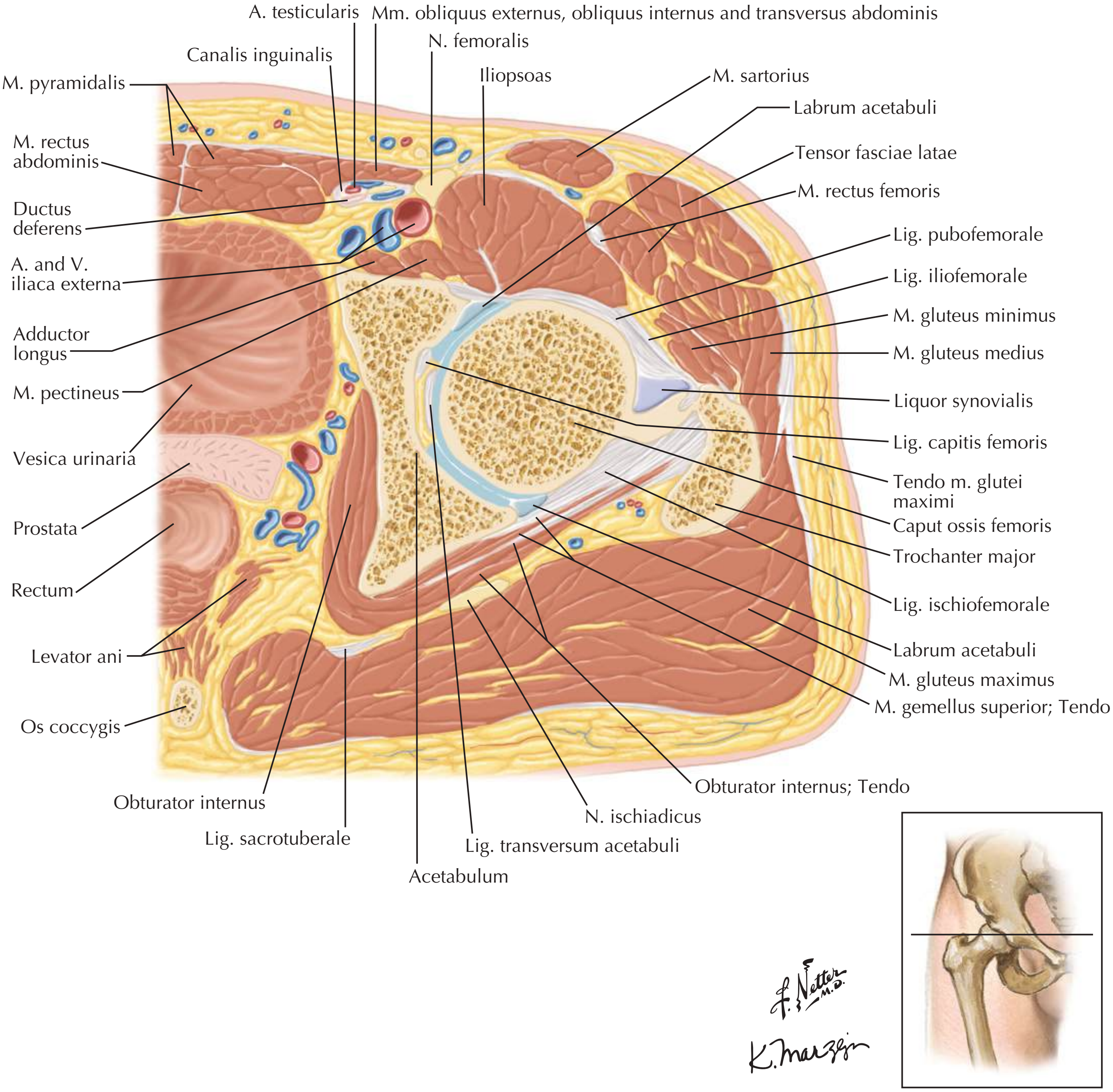
MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
Mm. interossei dorsales (four muscles)	Mm. pedis	Adjacent sides of ossa 1-5 metatarsi	*M. 1*: Medial side of phalanx proximalis digiti 2 *Mm. 2-4*: Lateral sides of phalanges proximales digitorum 2–4	N. plantaris lateralis	Aa. arcuata, metatareae dorsales and metatareae plantares	Abduct 2nd through 4th digits of foot, flex metatarsophalangeal joints, and extend phalangeal bones
Mm. interossei plantares (three muscles)	Mm. pedis	Bases and facies mediales ossium 3-5 metatarsi	Medial sides of bases phalangium proximalium digitorum 3-5	N. plantaris lateralis	A. plantaris lateralis; Arcus plantaris; Aa. metatarseae plantares and digitales plantares	Adduct digits (3-5) and flex metatarsophalangeal joint and extend phalangeal bones
Mm. lumbricales	Mm. pedis	Tendines flexoris longi digitorum	Medial side of aponeuroses extensoriae digitorum 2-5	*Medial one:* N. plantaris medialis *Lateral three*: N. plantaris lateralis	Aa. plantaris lateralis and metatarseae plantares	Flexes proximal phalangeal bones at metatarsophalangeal joint, extends phalangeal bones at proximal interphalangeal and distal interphalangeal joints
Obturator externus	Compartimentum mediale femoris	Margins of foramen obturatum; Membrana obturatoria	Fossa trochanterica ossis femoris	N. obturatorius	Aa. circumflexa medialis femoris and obturatoria	Laterally rotates thigh, stabilizes head of femur in acetabulum
Obturator internus	Mm. glutei	Facies pelvica membranae obturatoriae and surrounding bone	Medial surface of trochanter major ossis femoris	N. obturatorii interni	Aa. pudendalis interna and obturatoria	Laterally rotates extended thigh, abducts flexed thigh at hip
M. pectineus	Compartimentum mediale femoris	Ramus superior ossis pubis	Linea pectinea ossis femoris	N. femoralis and sometimes N. obturatorius	Aa. circumflexa medialis femoris and obturatoria	Adducts and flexes thigh at hip
M. piriformis	Mm. glutei	Facies anterior ossis sacri (segments 2–4); Lig. sacrotuberale (inconstant)	Superior border of trochanter major ossis femoris	Rr. anteriores nn. spinalium L5-S2	Aa. gluteae superior and inferior; A. pudendalis interna	Laterally rotates extended thigh, abducts flexed thigh at hip
M. plantaris	Compartimentum posterius cruris	Inferior end of linea supracondylaris lateralis ossis femoris; Lig. popliteum obliquum	Tuber calcanei via tendo calcaneus	N. tibialis	A. poplitea	Weakly assists gastrocnemius
M. popliteus	Compartimentum posterius cruris	Facies lateralis condyli lateralis ossis femoris; Meniscus lateralis	Facies posterior tibiae, superior to linea solea	N. tibialis	Aa. inferiores medialis and lateralis genus	Weakly flexes knee and unlocks it by rotating femur on fixed tibia
Psoas major	Iliopsoas	Procc. transversi vertebrarum lumbalium; Sides of corpora vertebrarum T12–L5; Intervening disci intervertebrales	Trochanter minor ossis femoris	Rr. anteriores nn. spinalium L1-L3	Rr. lumbales a. iliolumbalis	Acting superiorly with iliacus, flexes hip; acting inferiorly, flexes vertebral column laterally; used to balance trunk in sitting position; acting inferiorly with iliacus, flexes trunk
M. quadratus femoris	Mm. glutei	Lateral margin of Tuber ischiadicum	Tuberculum quadratum [cristae intertrochantericae] ossis femoris	N. musculi quadrati femoris	A. circumflexa medialis femoris	Laterally rotates thigh at hip
M. quadratus plantae	Mm. pedis	Medial and lateral sides of facies plantaris calcanei	Posterolateral edge of tendo flexoris longi digitorum	N. plantaris lateralis	Aa. plantares medialis and lateralis; Arcus plantaris profundus	Corrects for oblique pull of flexor longus digitorum tendon, thus assisting in flexion of digits of foot
M. rectus femoris (of M. quadriceps)	Compartimentum anterius femoris	Spina iliaca anterior inferior; Os ilium, superior to acetabulum	Basis patellae; Tuberositas tibiae, via lig. patellae	N. femoralis	Aa. profunda femoris and circumflexa lateralis femoris	Extends leg at knee joint and flexes thigh at hip joint

MUSCLE	MUSCLE GROUP	PROXIMAL ATTACHMENT (ORIGIN)	DISTAL ATTACHMENT (INSERTION)	INNERVATION	BLOOD SUPPLY	MAIN ACTIONS
M. sartorius	Compartimentum anterius femoris	Spina iliaca anterior superior and superior part of notch below it	Superior part of facies medialis tibiae	N. femoralis	A. femoralis	Abducts, laterally rotates, and flexes thigh; flexes knee joint
M. semimembranosus	Compartimentum posterius femoris	Tuber ischiadicum	Posterior part of condylus medialis tibiae	N. ischiadicus (Divisio tibialis)	Rr. perforantes a. profundae femoris; A. circumflexa medialis femoris	Flexes leg, extends thigh
M. semitendinosus	Compartimentum posterius femoris	Tuber ischiadicum	Superior part of facies medialis tibiae	N. ischiadicus (Divisio tibialis)	Rr. perforantes a. profundae femoris; A. circumflexa medialis femoris	Flexes leg, extends thigh
M. soleus	Compartimentum posterius cruris	Posterior aspect of caput fibulae; Proximal 1/4 of facies posterior fibulae; Linea solea tibiae	Tuber calcanei via tendo calcaneus	N. tibialis	Aa. poplitea, tibialis posterior, and fibularis	Plantarflexes foot at ankle, stabilizes leg over foot
Tensor fasciae latae	Mm. glutei	Spina iliaca anterior superior; Anterior part of crista iliaca	Tractus iliotibialis, which attaches to condylus lateralis tibiae	N. gluteus superior	R. ascendens a. circumflexae lateralis femoris	Abducts, medially rotates, and flexes thigh at hip; helps to keep knee extended
M. tibialis anterior	Compartimentum anterius cruris	Condylus lateralis tibiae; Proximal half of facies lateralis tibiae; Membrana interossea	Medial plantar surfaces of os cuneiforme mediale and basis ossis 1 metatarsi	N. fibularis profundus	A. tibialis anterior	Dorsiflexes foot at ankle and inverts foot
M. tibialis posterior	Compartimentum posterius cruris	Facies posterior tibiae, below linea solea; Membrana interossea; Proximal half of facies posterior fibulae	Tuberositas ossis navicularis; All ossa cuneiformia; Os cuboideum; Bases ossium 2-4 metatarsi	N. tibialis	A. fibularis	Plantarflexes foot at ankle and inverts foot
M. vastus intermedius (of M. quadriceps)	Compartimentum anterius femoris	Facies anterior and lateralis corporis ossis femoris	Basis patellae; Tuberositas tibiae, via lig. patellae	N. femoralis	Aa. circumflexa lateralis femoris and profunda femoris	Extends leg at knee joint
M. vastus lateralis (of M. quadriceps)	Compartimentum anterius femoris	Trochanter major; Lateral lip of tuberositas glutea; Labium laterale lineae asperae	Basis patellae; Tuberositas tibiae, via lig. patellae	N. femoralis	Aa. circumflexa lateralis femoris and profunda femoris	Extends leg at knee joint
M. vastus medialis (of M. quadriceps)	Compartimentum anterius femoris	Linea intertrochanterica; Trochanter major; Lateral lip of tuberositas glutea; Labium laterale lineae asperae	Basis patellae; Tuberositas tibiae, via lig. patellae	N. femoralis	Aa. femoralis and profunda femoris	Extends leg at knee joint

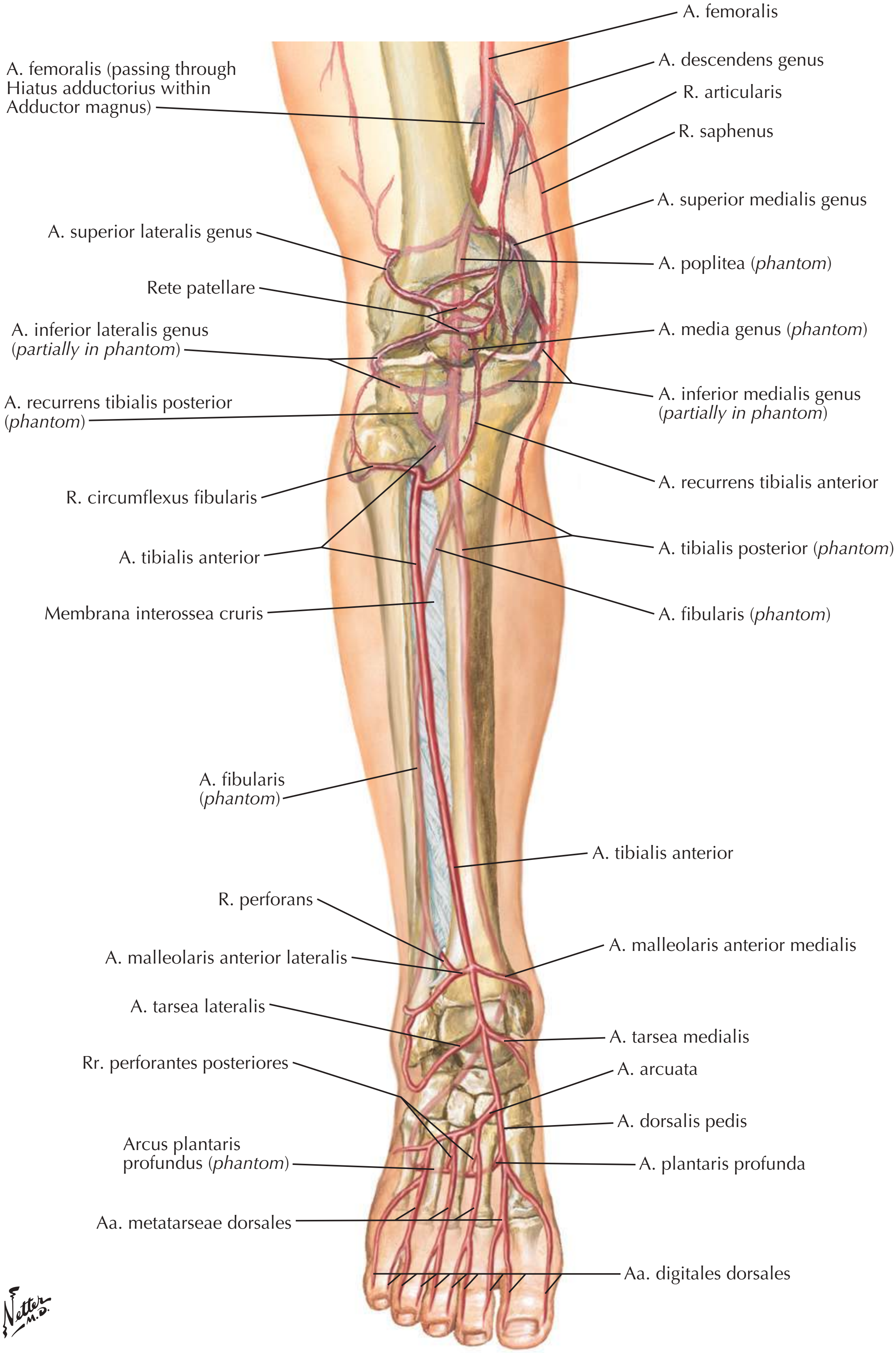

Lig. inguinale
V. iliaca externa
V. circumflexa superficialis ilium
V. epigastrica superficialis
V. pudendalis externa
V. circumflexa lateralis femoris
V. circumflexa medialis femoris
V. profunda femoris
V. saphena accessoria
V. femoralis
V. saphena magna
Canalis adductorius
V. poplitea
Vv. geniculares
V. saphena parva
Vv. fibulares
Vv. tibiales posteriores
Vv. tibiales anteriores
V. saphena magna
V. saphena parva
V. plantaris lateralis
Rete venosum dorsale pedis
V. plantaris medialis
Rete venosum dorsale pedis
Arcus venosus plantaris
F. Netter M.D.
K. Marzejon
🟦 Vv. profundi
🟦 Vv. superficiales

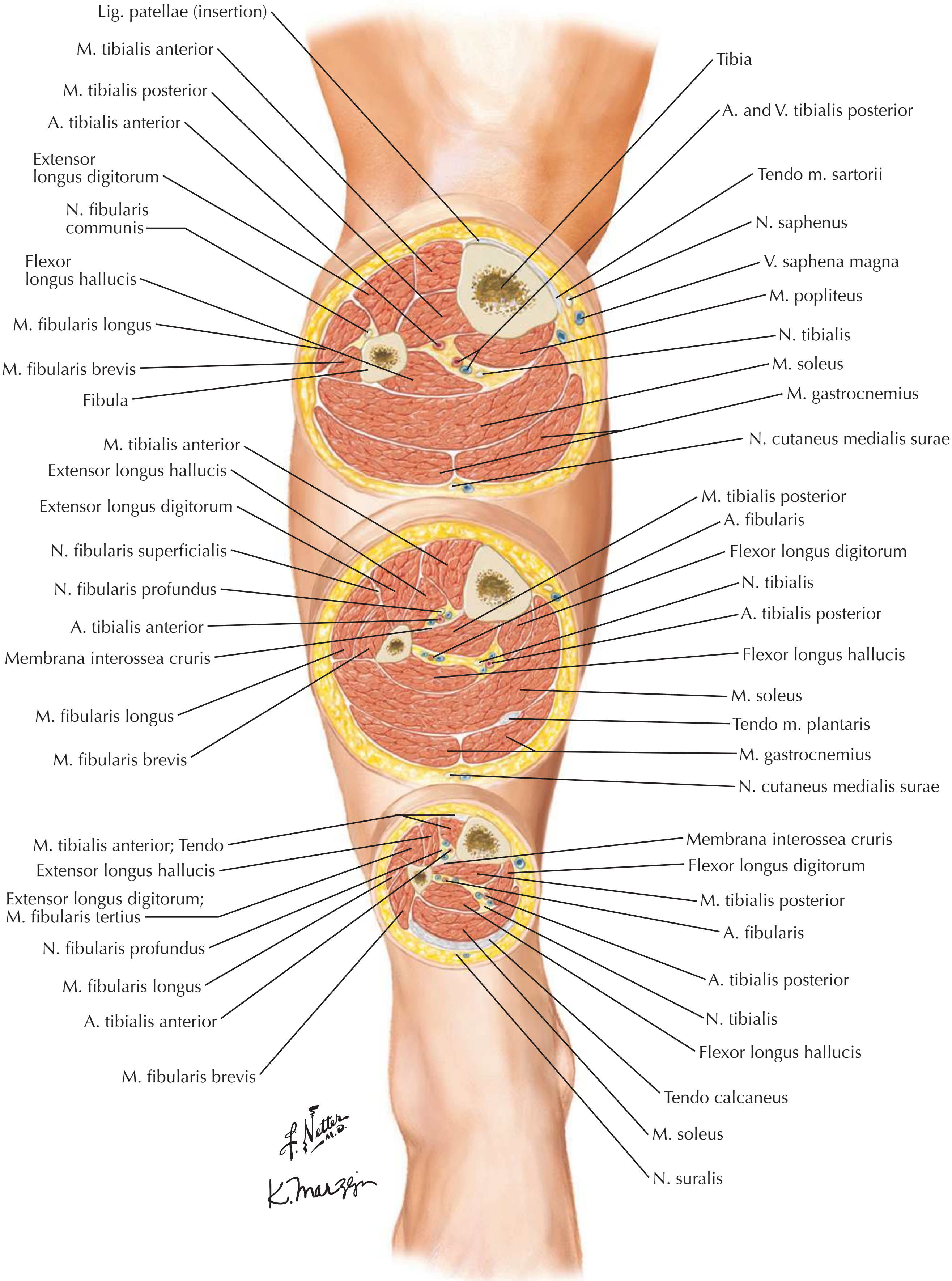

A. iliaca externa
A. circumflexa profunda ilium
A. epigastrica inferior
A. circumflexa superficialis ilium
A. epigastrica superficialis
A. pudendalis externa superficialis
A. femoralis
A. obturatoria
A. pudendalis externa profunda
A. circumflexa medialis femoris
R. ascendens
R. transversus
R. descendens
A. circumflexa lateralis femoris
A. femoralis
Rr. musculares
A. profunda femoris
Rr. perforantes
A. femoralis (passing through Hiatus adductorius within Adductor magnus)
A. descendens genus
R. articularis
R. saphenus
A. superior medialis genus
A. superior lateralis genus
A. poplitea (*phantom*)
Rete patellare
A. inferior lateralis genus (*partially in phantom*)
A. media genus (*phantom*)
A. inferior medialis genus (*partially in phantom*)
A. recurrens tibialis posterior (*phantom*)
A. recurrens tibialis anterior
R. circumflexus fibularis
A. tibialis anterior
A. tibialis posterior (*phantom*)
Membrana interossea cruris
A. fibularis (*phantom*)

Cross-Sectional Anatomy of Hip: Axial View

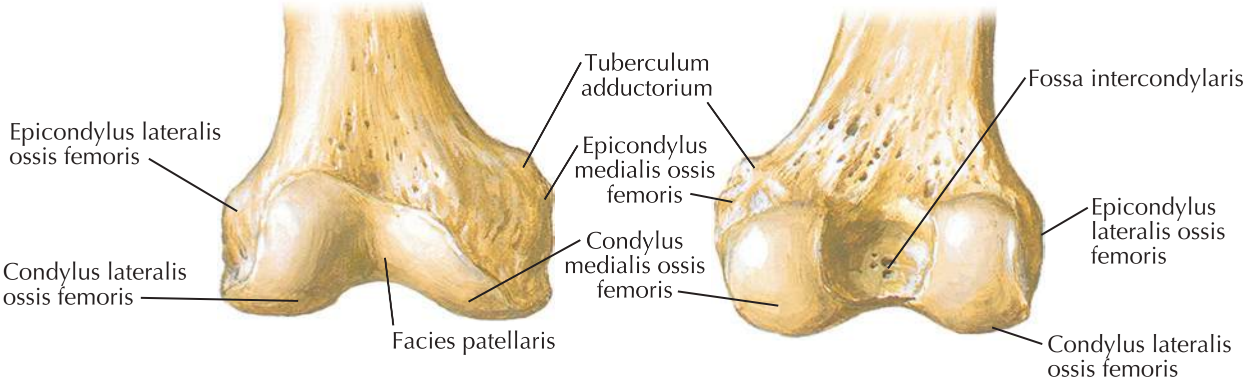

A. testicularis
Mm. obliquus externus, obliquus internus and transversus abdominis
N. femoralis
Canalis inguinalis
Iliopsoas
M. pyramidalis
M. sartorius
Labrum acetabuli
M. rectus abdominis
Tensor fasciae latae
M. rectus femoris
Ductus deferens
Lig. pubofemorale
A. and V. iliaca externa
Lig. iliofemorale
M. gluteus minimus
Adductor longus
M. gluteus medius
M. pectineus
Liquor synovialis
Lig. capitis femoris
Vesica urinaria
Tendo m. glutei maximi
Prostata
Caput ossis femoris
Trochanter major
Rectum
Lig. ischiofemorale
Labrum acetabuli
Levator ani
M. gluteus maximus
M. gemellus superior; Tendo
Os coccygis
Obturator internus; Tendo
Obturator internus
N. ischiadicus
Lig. sacrotuberale
Lig. transversum acetabuli
Acetabulum
F. Netter M.D.
K. Marzejon

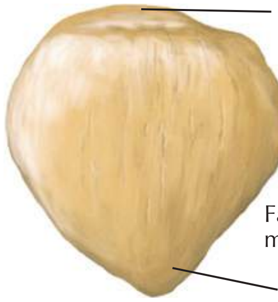
Arteries of Knee and Foot


A. femoralis
A. femoralis (passing through Hiatus adductorius within Adductor magnus)
A. descendens genus
R. articularis
R. saphenus
A. superior medialis genus
A. superior lateralis genus
A. poplitea (*phantom*)
Rete patellare
A. inferior lateralis genus (*partially in phantom*)
A. media genus (*phantom*)
A. inferior medialis genus (*partially in phantom*)
A. recurrens tibialis posterior (*phantom*)
R. circumflexus fibularis
A. recurrens tibialis anterior
A. tibialis anterior
A. tibialis posterior (*phantom*)
Membrana interossea cruris
A. fibularis (*phantom*)
A. fibularis (*phantom*)
A. tibialis anterior
R. perforans
A. malleolaris anterior lateralis
A. malleolaris anterior medialis
A. tarsea lateralis
A. tarsea medialis
Rr. perforantes posteriores
A. arcuata
A. dorsalis pedis
Arcus plantaris profundus (*phantom*)
A. plantaris profunda
Aa. metatarseae dorsales
Aa. digitales dorsales

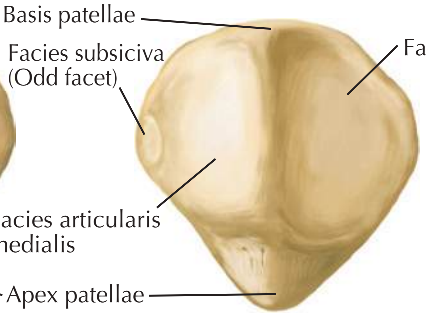

Lig. patellae (insertion)
M. tibialis anterior
M. tibialis posterior
A. tibialis anterior
Extensor longus digitorum
N. fibularis communis
Flexor longus hallucis
M. fibularis longus
M. fibularis brevis
Fibula
Tibia
A. and V. tibialis posterior
Tendo m. sartorii
N. saphenus
V. saphena magna
M. popliteus
N. tibialis
M. soleus
M. gastrocnemius
N. cutaneus medialis surae
M. tibialis anterior
Extensor longus hallucis
Extensor longus digitorum
N. fibularis superficialis
N. fibularis profundus
A. tibialis anterior
Membrana interossea cruris
M. fibularis longus
M. fibularis brevis
M. tibialis posterior
A. fibularis
Flexor longus digitorum
N. tibialis
A. tibialis posterior
Flexor longus hallucis
M. soleus
Tendo m. plantaris
M. gastrocnemius
N. cutaneus medialis surae
M. tibialis anterior; Tendo
Extensor longus hallucis
Extensor longus digitorum; M. fibularis tertius
N. fibularis profundus
M. fibularis longus
A. tibialis anterior
M. fibularis brevis
Membrana interossea cruris
Flexor longus digitorum
M. tibialis posterior
A. fibularis
A. tibialis posterior
N. tibialis
Flexor longus hallucis
Tendo calcaneus
M. soleus
N. suralis

Osteology of Knee

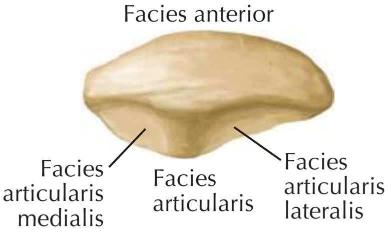

Epicondylus lateralis ossis femoris
Tuberculum adductorium
Epicondylus medialis ossis femoris
Condylus lateralis ossis femoris
Condylus medialis ossis femoris
Facies patellaris
Tuberculum adductorium
Fossa intercondylaris
Epicondylus medialis ossis femoris
Epicondylus lateralis ossis femoris
Condylus medialis ossis femoris
Condylus lateralis ossis femoris


Basis patellae
Apex patellae

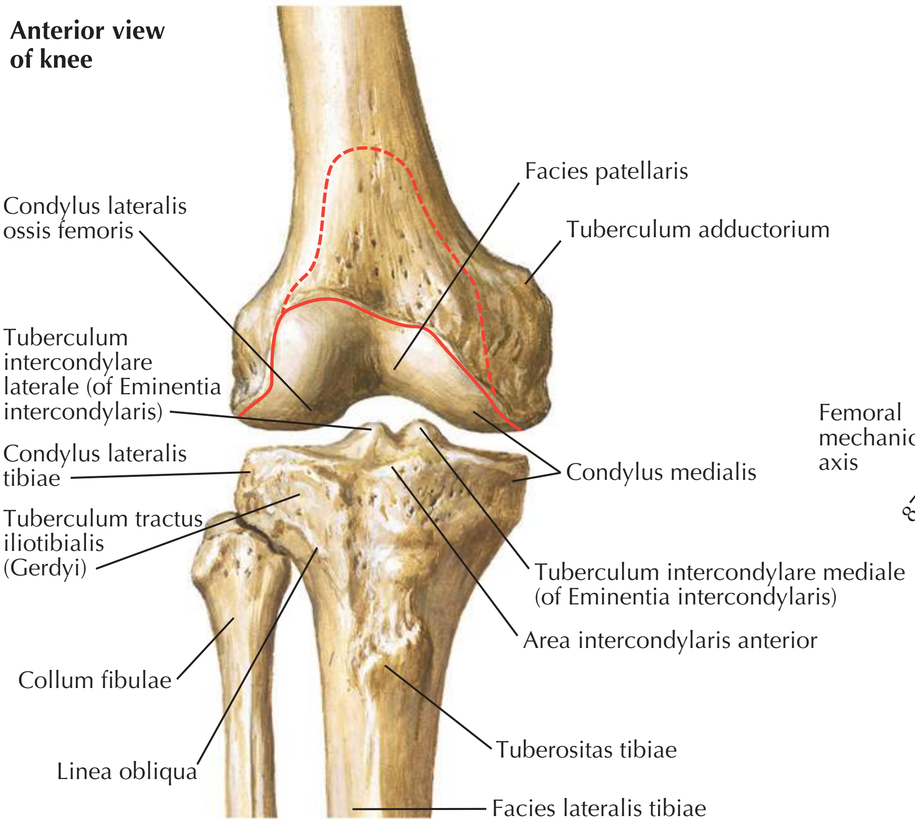
Anterior view

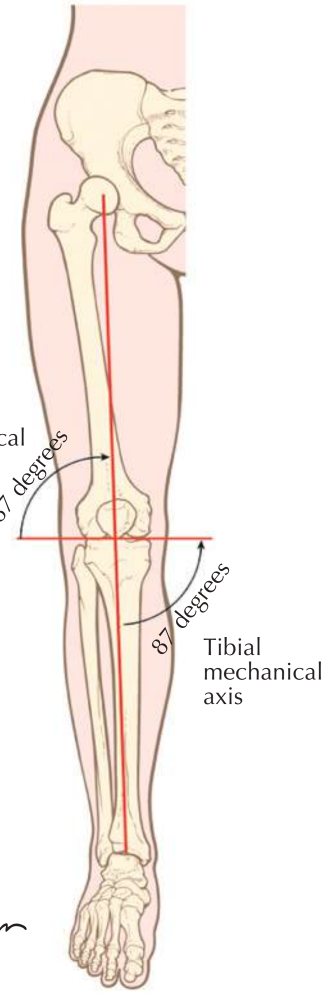

Basis patellae
Facies subsiciva (Odd facet)
Facies articularis lateralis
Facies articularis medialis
Apex patellae

Posterior view

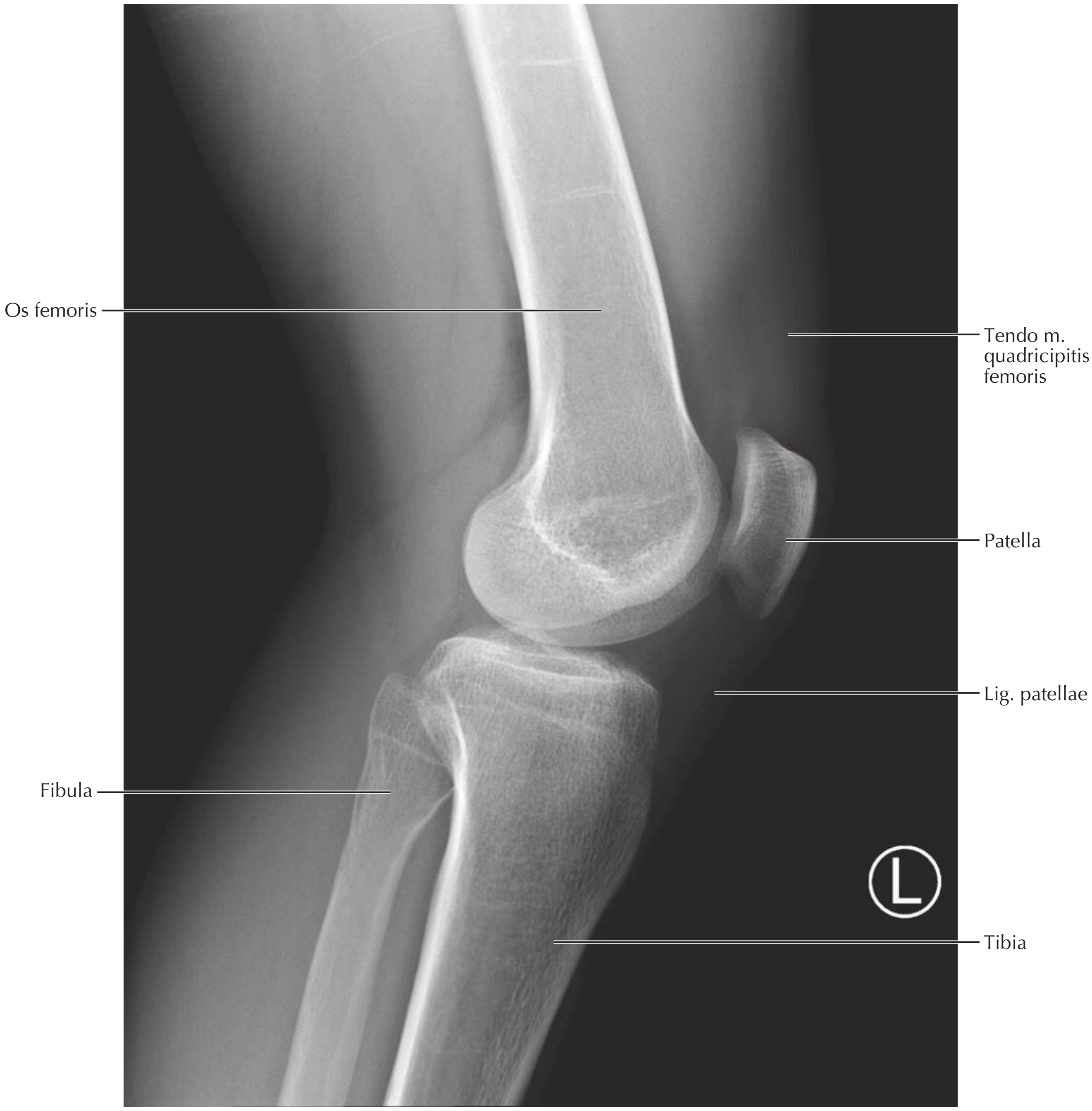

Facies anterior
Facies articularis medialis
Facies articularis
Facies articularis lateralis

Superior view


Anterior view of knee
Condylus lateralis ossis femoris
Facies patellaris
Tuberculum adductorium
Tuberculum intercondylare laterale (of Eminentia intercondylaris)
Condylus lateralis tibiae
Condylus medialis
Tuberculum tractus iliotibialis (Gerdyi)
Tuberculum intercondylare mediale (of Eminentia intercondylaris)
Area intercondylaris anterior
Collum fibulae
Tuberositas tibiae
Linea obliqua
Facies lateralis tibiae

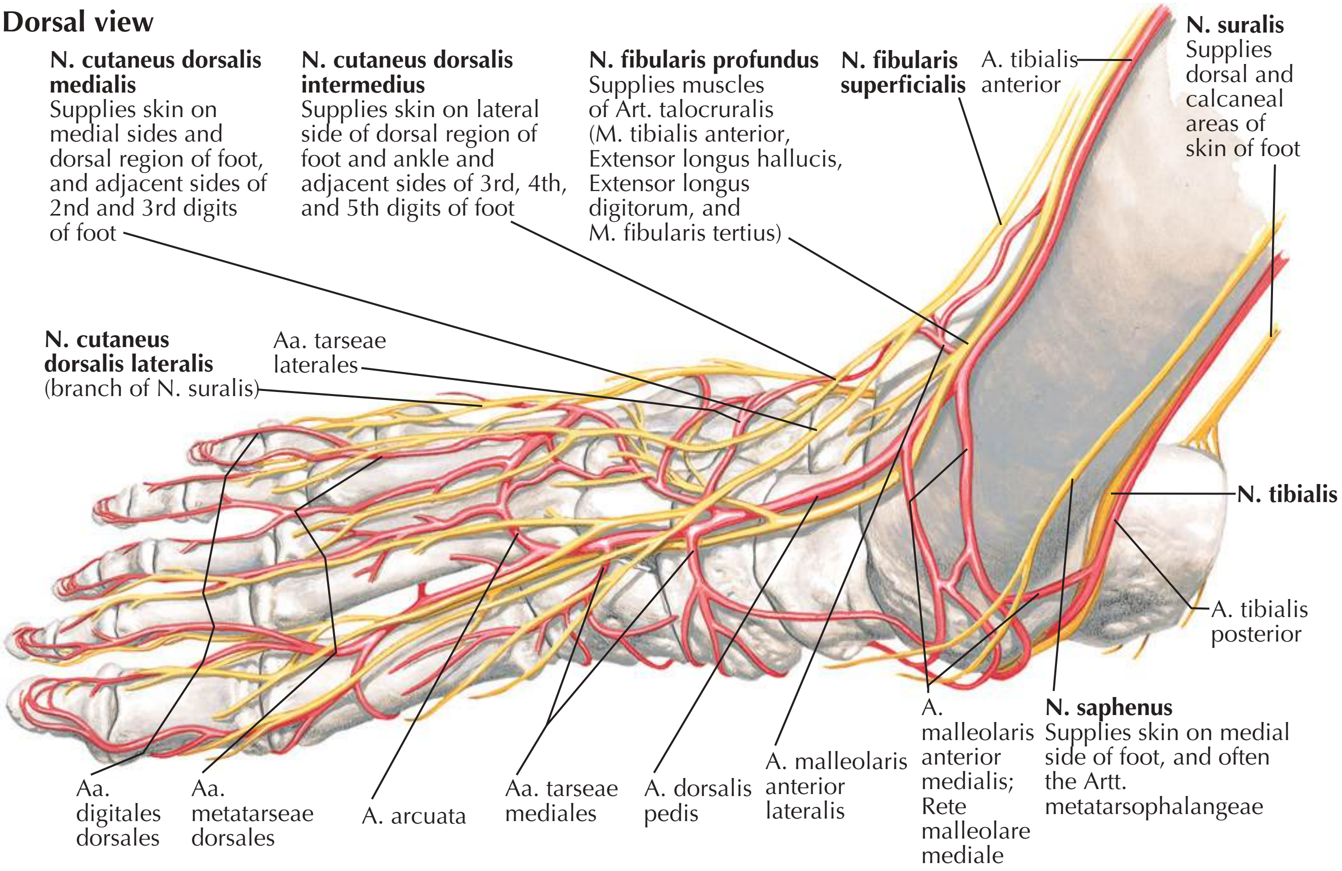

Femoral mechanical axis
87 degrees
87 degrees
Tibial mechanical axis

▬▬	Line of attachment of synovium (edge of articular cartilage) to distal Os femoris
- - - -	Line of reflection of synovial membrane

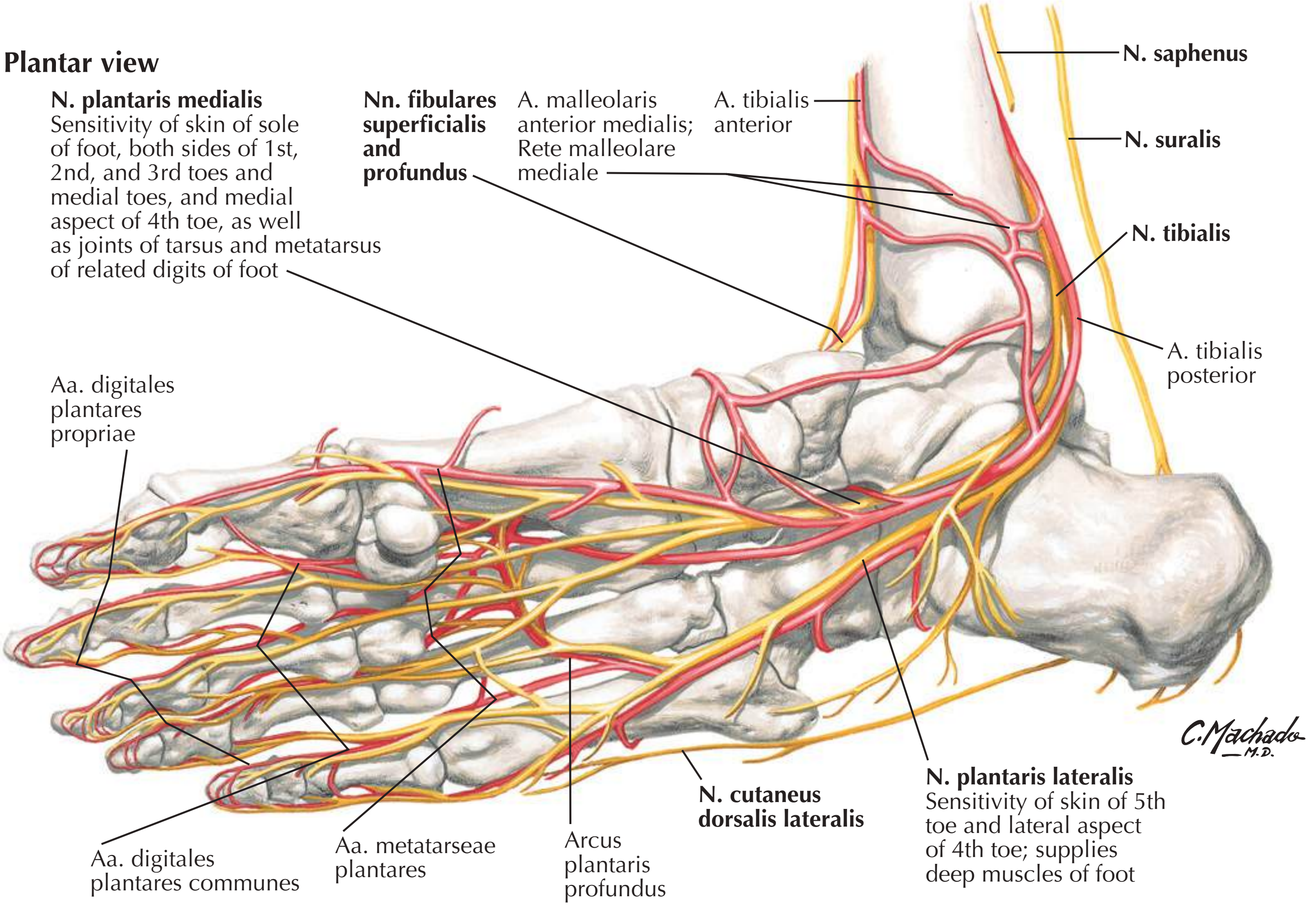

Os femoris
Tendo m. quadricipitis femoris
Patella
Lig. patellae
Fibula
L
Tibia

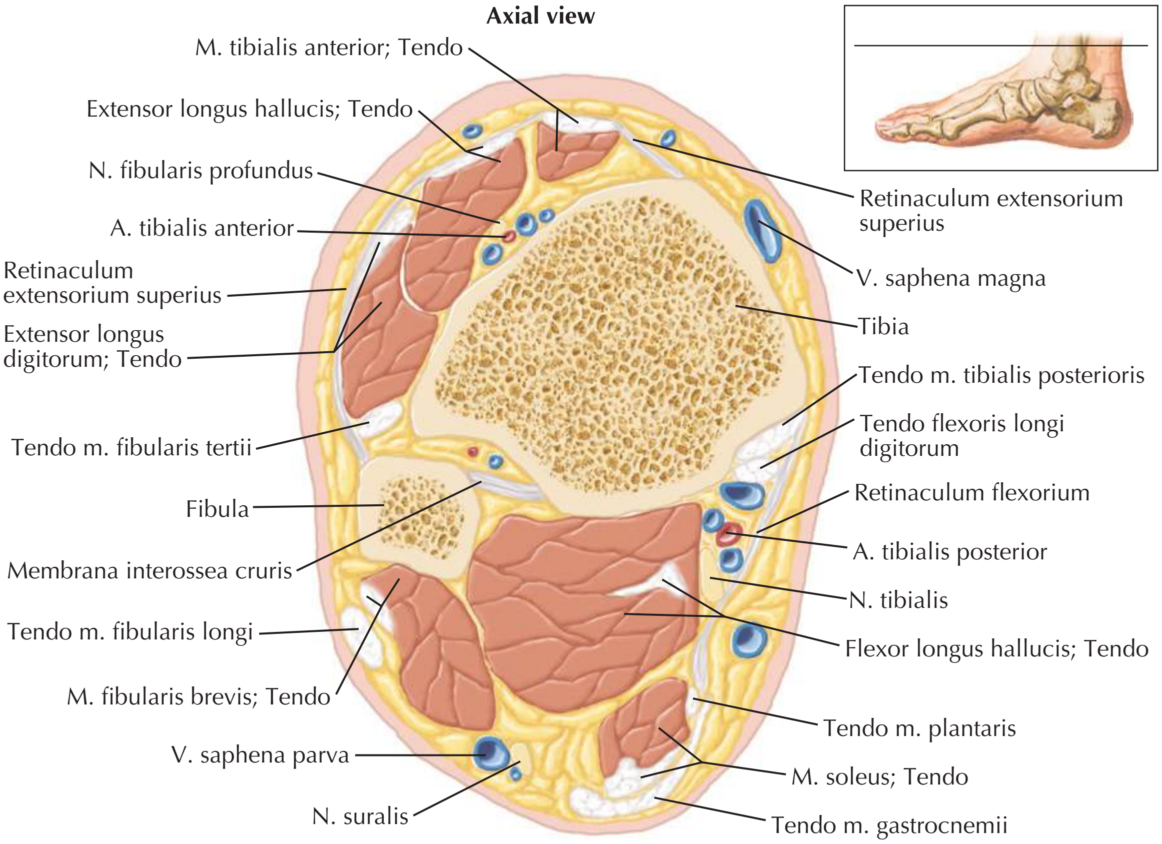
Anatomy of Foot: Nerves and Arteries

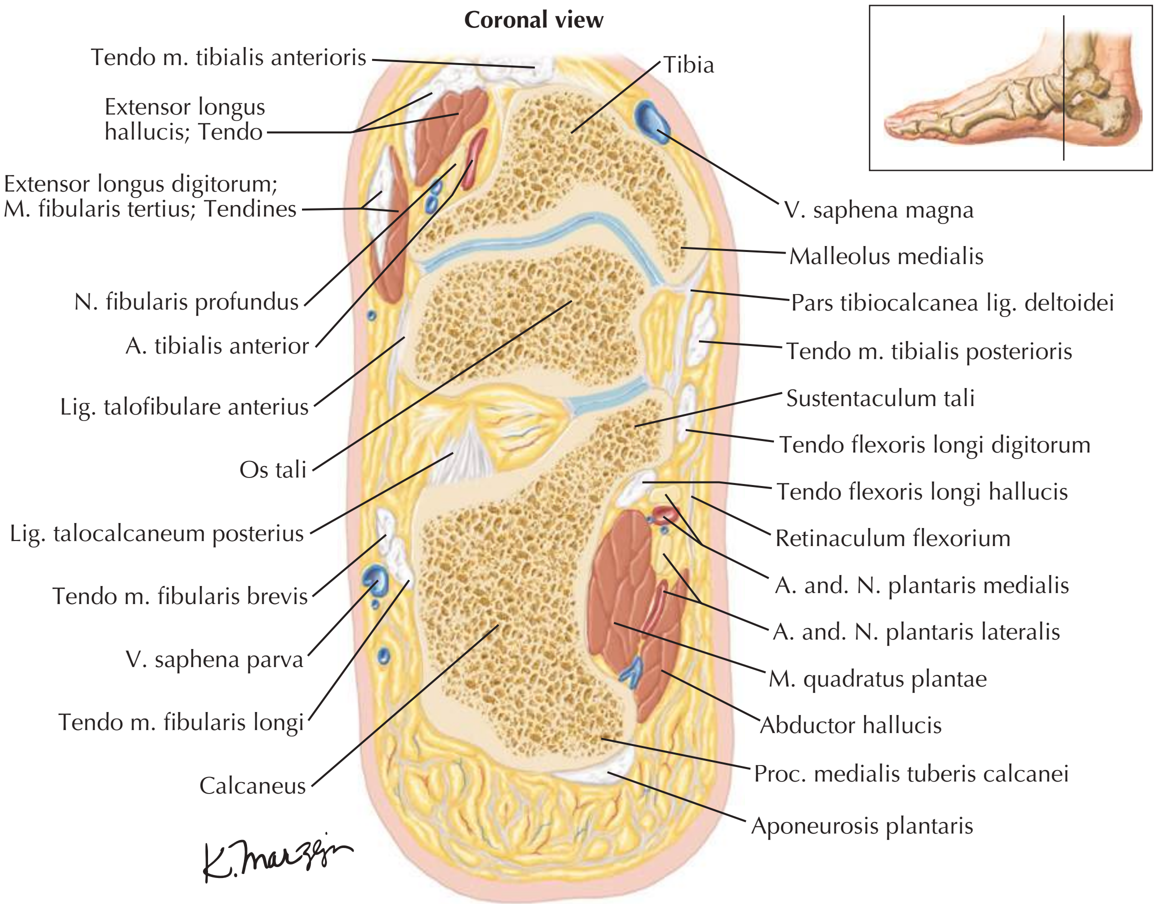
Dorsal view


N. cutaneus dorsalis medialis
Supplies skin on medial sides and dorsal region of foot, and adjacent sides of 2nd and 3rd digits of foot
N. cutaneus dorsalis intermedius
Supplies skin on lateral side of dorsal region of foot and ankle and adjacent sides of 3rd, 4th, and 5th digits of foot
N. fibularis profundus
Supplies muscles of Art. talocruralis (M. tibialis anterior, Extensor longus hallucis, Extensor longus digitorum, and M. fibularis tertius)
N. fibularis superficialis
A. tibialis anterior
N. suralis
Supplies dorsal and calcaneal areas of skin of foot
N. cutaneus dorsalis lateralis
(branch of N. suralis)
Aa. tarseae laterales
N. tibialis
A. tibialis posterior
Aa. digitales dorsales
Aa. metatarseae dorsales
A. arcuata
Aa. tarseae mediales
A. dorsalis pedis
A. malleolaris anterior lateralis
A. malleolaris anterior medialis; Rete malleolare mediale
N. saphenus
Supplies skin on medial side of foot, and often the Artt. metatarsophalangeae

Plantar view

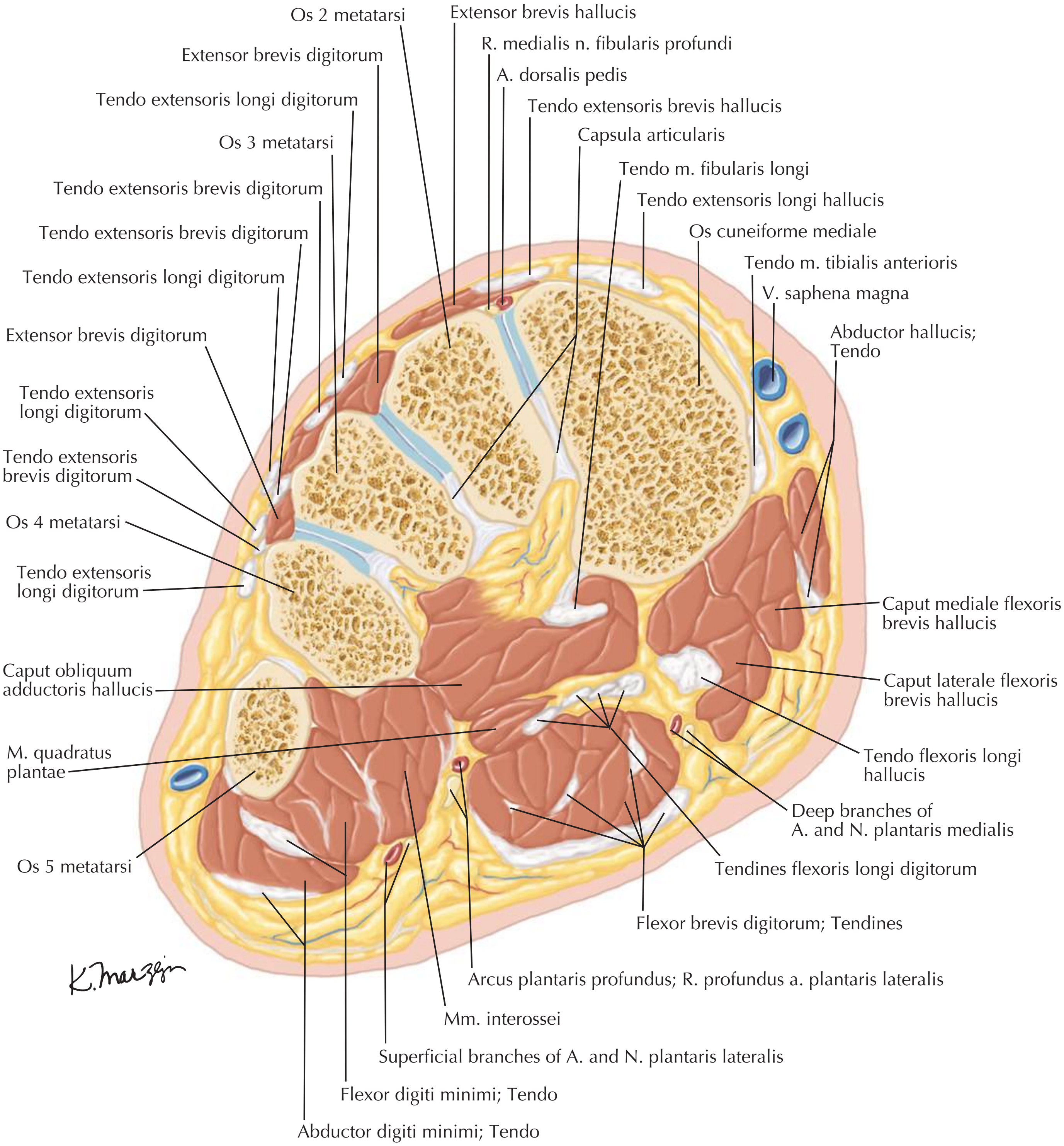

N. plantaris medialis
Sensitivity of skin of sole of foot, both sides of 1st, 2nd, and 3rd toes and medial toes, and medial aspect of 4th toe, as well as joints of tarsus and metatarsus of related digits of foot
Nn. fibulares superficialis and profundus
A. malleolaris anterior medialis; Rete malleolare mediale
A. tibialis anterior
N. saphenus
N. suralis
N. tibialis
A. tibialis posterior
Aa. digitales plantares propriae
Aa. digitales plantares communes
Aa. metatarseae plantares
Arcus plantaris profundus
N. cutaneus dorsalis lateralis
N. plantaris lateralis
Sensitivity of skin of 5th toe and lateral aspect of 4th toe; supplies deep muscles of foot
C.Machado M.D.

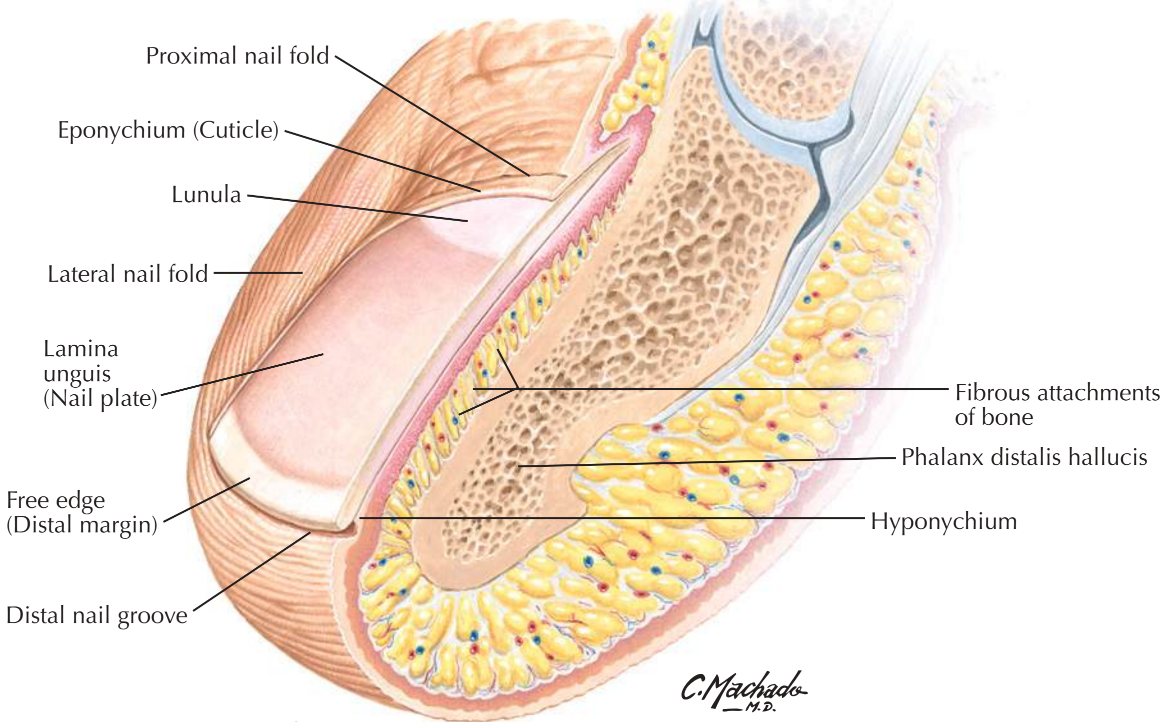

Axial view
M. tibialis anterior; Tendo
Extensor longus hallucis; Tendo
N. fibularis profundus
A. tibialis anterior
Retinaculum extensorium superius
Extensor longus digitorum; Tendo
Tendo m. fibularis tertii
Fibula
Membrana interossea cruris
Tendo m. fibularis longi
M. fibularis brevis; Tendo
V. saphena parva
N. suralis
Retinaculum extensorium superius
V. saphena magna
Tibia
Tendo m. tibialis posterioris
Tendo flexoris longi digitorum
Retinaculum flexorium
A. tibialis posterior
N. tibialis
Flexor longus hallucis; Tendo
Tendo m. plantaris
M. soleus; Tendo
Tendo m. gastrocnemii


Coronal view
Tendo m. tibialis anterioris
Extensor longus hallucis; Tendo
Extensor longus digitorum; M. fibularis tertius; Tendines
N. fibularis profundus
A. tibialis anterior
Lig. talofibulare anterius
Os tali
Lig. talocalcaneum posterius
Tendo m. fibularis brevis
V. saphena parva
Tendo m. fibularis longi
Calcaneus
Tibia
V. saphena magna
Malleolus medialis
Pars tibiocalcanea lig. deltoidei
Tendo m. tibialis posterioris
Sustentaculum tali
Tendo flexoris longi digitorum
Tendo flexoris longi hallucis
Retinaculum flexorium
A. and. N. plantaris medialis
A. and. N. plantaris lateralis
M. quadratus plantae
Abductor hallucis
Proc. medialis tuberis calcanei
Aponeurosis plantaris

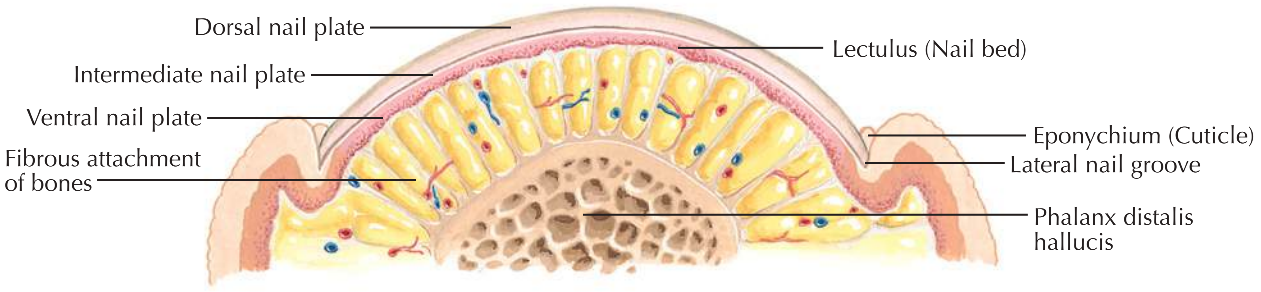
Cross-Sectional Anatomy of Ankle and Foot (continued)

Coronal view

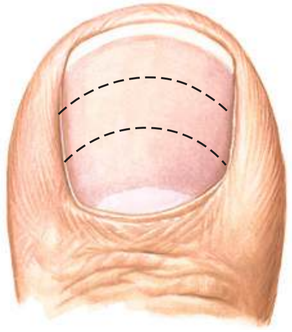

Os 2 metatarsi
Extensor brevis hallucis
R. medialis n. fibularis profundi
Extensor brevis digitorum
A. dorsalis pedis
Tendo extensoris longi digitorum
Tendo extensoris brevis hallucis
Os 3 metatarsi
Capsula articularis
Tendo m. fibularis longi
Tendo extensoris brevis digitorum
Tendo extensoris longi hallucis
Tendo extensoris brevis digitorum
Os cuneiforme mediale
Tendo m. tibialis anterioris
Tendo extensoris longi digitorum
V. saphena magna
Extensor brevis digitorum
Abductor hallucis; Tendo
Tendo extensoris longi digitorum
Tendo extensoris brevis digitorum
Os 4 metatarsi
Tendo extensoris longi digitorum
Caput mediale flexoris brevis hallucis
Caput obliquum adductoris hallucis
Caput laterale flexoris brevis hallucis
M. quadratus plantae
Tendo flexoris longi hallucis
Deep branches of A. and N. plantaris medialis
Os 5 metatarsi
Tendines flexoris longi digitorum
Flexor brevis digitorum; Tendines
Arcus plantaris profundus; R. profundus a. plantaris lateralis
Mm. interossei
Superficial branches of A. and N. plantaris lateralis
Flexor digiti minimi; Tendo
Abductor digiti minimi; Tendo


Proximal nail fold
Eponychium (Cuticle)
Lunula
Lateral nail fold
Lamina unguis (Nail plate)
Free edge (Distal margin)
Distal nail groove
Fibrous attachments of bone
Phalanx distalis hallucis
Hyponychium
C. Machado M.D.

Section of toe


Dorsal nail plate
Intermediate nail plate
Ventral nail plate
Fibrous attachment of bones
Lectulus (Nail bed)
Eponychium (Cuticle)
Lateral nail groove
Phalanx distalis hallucis

Cross section of toenail



Toenail growth

The average growth rate of toenails is about 1 mm a month.

The rounded shape of the free edge (distal margin) of the nails is dictated by the shape of the lunula. After avulsion of a nail, the free edge of the new one grows parallel to the lunula

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